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Econometric analysis of trade, exports, imports, energy consumption and CO_2 emission in six regions

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ABSTRACT

The aim of this study is to explore the bi-directional long run relationship between trade-energy consumption, trade-CO_2 emission, exports-energy consumption, exports-CO_2 emission, imports-energy consumption, and imports-CO_2 emission. 189 countries from six different regions, namely, Asia Pacific, Eastern Europe, the Americas, Middle East and North Africa (MENA), Sub Saharan Africa (SSA), and Western Europe, were selected. The panel fully modified OLS (FMOLS) was utilized taking the period of 1990–2011. The panel results show that all the regions, excluding Eastern Europe, show a long run positive relationship between the trade variables-energy consumption and between the trade variable-CO_2 emission. However, at the country level, the results reveal that the feedback long run positive relationship between the trade variables, energy consumption and CO_2 emission takes place in most cases when the share of trade of goods and services to GDP is significant and the level of the countries' development is high. However, the negative or the non-significant long run relationship between the variables takes place generally in countries when the trade variables do not play a large share in their GDP and when these countries are in early development stages.

Contents

1. Introduction

The relationship between energy consumption, CO_2 emission, and the macroeconomic variables has attracted many researchers, particularly the correlation between energy consumption, CO_2 emission, and GDP growth [1–9]. However, there have been a number of recent studies exploring the relationship between energy consumption, CO_2 emission, and trade. This is because the world had witnessed a substantial growth in international trade of goods, services, and capital over the last two decades. This growth in international trade increased its value over 77% during the period of 1990–2011 [10]. This remarkable boost in international trade made the world economy more dependent on it since its share to the world gross domestic product increased from 39% in 1990 to 59% in 2011 [10]. It is well known that trade cannot be accomplished without the use of transportation. Consequently, the volatility of transportation plays a vital role in international trade

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[11–13]. Nonetheless, despite the importance of transportation sector in international trade, this sector represents a major source of energy consumption and pollution. Therefore, the relationship between international trade, energy consumption, and CO_2 emission may be present. Moreover, there are limited studies that explored the relationship between energy consumption, CO_2 emission, and international trade. The results of these studies varied. For instance, it was found that trade openness has a positive long run and short run impact on CO_2 emission in newly industrialized countries [14]. These results were also established in Turkey [15,16], the Middle East [17], Pakistan [18], and in countries that have different income levels [19]. In addition, exports are deemed as an important factor that increased pollution levels in China [20]. On the contrary, a number of studies found that trade has no effect on CO_2 emission in China and India [21,22] while it has a negative effect on CO_2 emission in Indonesia [23]. Additionally, exports and imports of goods and services have a positive long run and short run effect on energy consumption in the Middle East [24], South America [25], and in OECD countries [26].

From the literature above, it is clear that there is an insufficient number of studies that explored the relationship between energy consumption, CO_2 emission, and trade. Moreover, most of the previous studies had focused on the bi-directional short run causality between energy consumption, CO_2 emission, and trade. Hence, this study will explore the trade, energy consumption, and CO_2 emission relationship in 189 countries that are categorized by six different regions. Unlike past studies, this study will focus on the bi-directional long run relationship between energy consumption, CO_2 emission, and trade since a number of studies [27–29] explained that examining the long run relationship between these variables can have important policy implications.

2. Data and methodology

Annual data were utilized taking the time period of 1990–2011. 189 countries from six regions, namely, Asia Pacific, Eastern Europe, the Americas, Middle East and North Africa (MENA), Sub Saharan Africa (SSA), and Western Europe countries, were selected. Since the main objective of this study is to examine the bi-directional long run relationship between trade of goods and services (aggregate and disaggregate level), energy consumption, and CO_2 emission, this study used total trade of goods and services (TD) which is calculated by the sum of exports of goods and services (EX) and imports of goods and services (IM). The variables are measured in millions of constant 2000 US dollars. Moreover, this study used total primary energy consumption (ENC) that is measured in Quadrillion Btu. Total carbon dioxide emission from energy consumption (EM) is measured in million metric tons. Data for exports and imports of goods and services were retrieved from Euromonitor database [30] while data for total primary energy consumption and CO_2 emission were retrieved from Energy Information Administration (EIA) [31].

This study utilized panel data model to examine the long run relationship between trade, energy consumption, and CO_2 emission. The panel model's popularity increased among researchers due to its several advantages that include controlling the serial correlation and the individual heterogeneity and it can also increase the degrees of freedom and the reliability of the test because panel data increases the power of econometric tests [32].

The first step in the econometric analysis was to test the variables' stationarity. This was achieved by applying the Panel unit root test. The panel unit root test became popular because of its high power. This study utilized two panel unit root tests namely, Levin, Lin and Chu (LLC) [33] and the Im, Pesaran and Shin (IPS) [34]. The LLC test assumes that the variables contain a panel unit root so that the autoregressive coefficient (p_i) is identical across the cross sections. However, the IPS test allows the autoregressive coefficients to vary across the cross sections. Both tests use the following ADF specification:

$$\Delta y_{it} = \alpha\, y_{it-1} + \sum_{j=1}^{pi} \beta_{ij}\, y_{it-j} + X'_{it}\delta + \varepsilon_{it} \quad (1)$$

i is the cross sections (number of countries) observed over the periods t (1990–2011), X is the exogenous variables in the model and ε_{it} is the error term.

The difference between the LLC and the IPS unit root test is that the LLC utilizes a common ADF regression (Eq. 1) for the entire cross sections while the IPS uses a separate ADF regression for each cross section.

Both unit root tests work under the null hypothesis and alternative hypothesis. The former shows that the variables contain a panel unit root which signals that the variables are not stationary while the latter indicates that the variables do not contain a panel unit root which signifies that the variables are stationary.

Since this study's main objective is to explore the bi-directional long run relationship between trade (in both aggregate and disaggregate level), total energy consumption, and CO_2 emission, the Panel Fully Modified OLS (FMOLS) was used. The FMOLS was proposed by Pedroni [35]. This cointegration equation can work with variables that are stationary at different levels. Moreover, it can eliminate the long run correlation problem between the cointegrating equations. The FMOLS is unbiased and has a fully efficient mixture normal asymptotics which allow for standard Wald tests to use asymptotic Chi-square statistical inference.

The FMOLS estimator is presented as follows:

$$\hat{\theta} = \begin{bmatrix} \hat{\beta} \\ \hat{\gamma}_1 \end{bmatrix} = \left(\sum_{t=1}^{T} z_{it} \acute{z}_{it} \right)^{-1} \left(\sum_{t=1}^{T} z_{it} y_{it}^{+} - T \begin{bmatrix} \hat{\lambda}_{12}^{+\prime} \\ 0 \end{bmatrix} \right) \quad (2)$$

Z_t is the deterministic trend and stochastic regressors. The estimation of the FMOLS is the construction of the long run covariance matrix estimators.

3. Empirical results

The first step was to test the stationarity of the variables.[2] Thus, the LLC and IPS were used. Tables 1 and 2 (see Appendix A) review the panel unit root test results. The results revealed that all the variables are non-stationary at the level thus the null hypothesis of a panel unit root cannot be rejected. On the other hand, the variables are significant at first difference which rejects the null hypothesis. Therefore, the variables are stationary at the first difference.

3.1. FMOLS test results

Since the variables are stationary, the fully modified OLS (FMOLS) test was utilized to examine the long run relationship between trade in goods and services in both aggregate and disaggregate levels. It should be noted that the lagged value of the dependent variable and the first differences of all variables were used as instruments to control the misspecification, autocorrelation and the heteroscidasticity among the variables.

Tables 3–8 reveal the FMOLS test results (see Appendix B). Tables 3 reviews the FMOLS test results for countries in the Americas. The results indicate the existence of a bi-directional positive long run relationship between energy consumption, and trade of goods and services in both aggregate and disaggregate levels, and between trade,

[2] The stationarity of the variables for each country was also tested by using the Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) tests and it was found that all the variables for each country stationary but at different levels.

exports, and imports of goods and services, and CO_2 emission in 93% of countries while the remaining 7% of countries did not show any relationship between the variables. However, the panel results revealed a bi-directional positive long run relationship between trade, exports, and imports of goods and services and energy consumption, and a bi-directional long run positive relationship between trade, exports and imports of goods and services and CO_2 emission in countries in the Americas.

Table 4 reviews that FMOLS test results for Asia Pacific countries. At the country level, the results reveal that from 43 countries, 33 countries show the existence of the bi-directional long run positive relationship between trade variables and energy consumption and between trade variables and CO_2 emission. Moreover, five countries namely, Afghanistan, Armenia, Nauru, North Korea, and Tajikistan indicate that there is no relationship between the variables. In contrast, a negative long run relationship between the variables was found in Azerbaijan, Kazakhstan, and Kyrgyzstan. A one way long run negative relationship from total trade of goods and services to energy consumption and from CO_2 emission to imports and exports of goods and services was found in Mongolia. The results for the French Polynesia show a bi-directional positive long run relationship between trade of goods and services and energy consumption, trade of goods and services and CO_2 emission, imports of goods and services and energy consumption, and between imports of goods and services and CO_2 emission. On the other hand, no relationship was found in the French Polynesia between exports of goods and services, energy consumption and CO_2 emission.

The FMOLS test results for East European countries in Table 5 revealed the existence of a bi-directional long run negative relationship between the trade of goods and services in both aggregate and disaggregate levels and energy consumption and CO_2 emission in Belarus, Bulgaria, Estonia, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, and Ukraine. These countries represent 58% of the East European countries. The remaining 42% of the countries show contrasting results whereby a positive bi-directional long run relationship between trade of goods and services in both aggregate and disaggregate levels and energy consumption and CO_2 emission exists, for instance Slovenia and Bosnia–Herzegovina. In addition, some countries showed that when trade, exports and imports of goods and services do not have a long run effect on energy consumption and vice versa, the long run relationship between trade, exports and imports of goods and services and CO_2 emission becomes insignificant. This particular relationship was found in Bulgaria, Czech Republic, Hungary, and Slovakia. The panel results revealed that the long run relationship between the trade of goods and services (both aggregate and disaggregate levels) and energy consumption is insignificant. Furthermore, a bi-directional long run negative relationship was found between trade, exports and imports of goods and services and CO_2 emission in Eastern European counties.

Table 6 reviews the FMOLS test results for the West European countries. From a total of 21 countries, 12 countries (57% of countries) have a bi-directional long run positive relationship between trade, exports and imports of goods and services and energy consumption and a bi-directional long run positive relationship between trade of goods and services (aggregate and disaggregate level) and CO_2 emission. In addition, a number of countries revealed an insignificant or negative long run relationship between trade, exports and imports of goods and services and energy consumption while the relationship between the trade variables and CO_2 emission is negative. This relationship can be seen in Denmark, Germany, and Sweden. Moreover, in Italy and Luxembourg, the long run relationship between the trade variables (TD, EX and IM) and energy consumption is positive and bi-directional. However, the long run relationship between the trade variables and CO_2 emission in Italy is positive and unidirectional from CO_2 emission to trade, exports and imports of goods and services while the relationship is insignificant in Luxembourg. In Belgium, the long run relationship between the trade variables and energy consumption is positive and bi-directional while there is positive long run unidirectional relationship from CO_2 emission to the trade variables. Contrary to Belgium, the results in Finland show a long run positive unidirectional relationship from the trade variables to energy consumption while a long run positive bi-directional relationship was found between the trade variables and CO_2 emission. On the other hand, a long run bi-directional positive relationship between the trade variables and energy consumption was found in Switzerland while a unidirectional negative relationship was found from CO_2 emission to exports and imports of goods and services. Lastly, the panel results revealed a bi-directional positive long run relationship between energy consumption and the trade variables and between the trade variables and CO_2 emission.

Table 7 reviews that FMOLS test results for the MENA countries. All MENA countries, with exception of Djibouti, have a bi-directional positive long run relationship between the trade variables (trade, exports and imports of goods and services) and energy consumption and CO_2 emission. However in Djibouti, a negative bi-directional long run relationship between the trade variables and energy consumption and CO_2 emission was found.

The results in Table 8 reviews the FMOLS test results for the SSA countries. From 46 countries 34 of them confirmed the existence of a positive bi-directional long run relationship between the trade variables (exports, imports, and total exports of goods and services) and energy consumption and between the trade variables and CO_2 emission. Moreover, the long run negative bi-directional relationship was found between the trade variables, energy consumption and CO_2 emission in Burundi, Eritrea, and Zimbabwe while no relationship between the variables was found in Chad and Mauritania. A number of countries displayed mixed results, for instance, the positive bi-directional long run relationship is present between the trade variables and energy consumption, but there was no significant relationship between the trade variables and CO_2 emission in Zambia. Furthermore, a long run bi-directional positive relationship was found between the trade variables and CO_2 emission, however, such relationship was inexistent between the trade variables and CO_2 emission in Rwanda. On the other hand, a positive long run relationship was found from energy consumption to the trade variables in Nigeria. Additionally, a negative long run relationship from the trade variables to CO_2 emission with feedback was found in Gabon while a negative long run relationship was found between exports of goods and services, energy consumption and CO_2 emission. Moreover, a long run positive relationship from imports of goods and services to energy consumption and CO_2 emission with feedback was found in Gambia.

4. Discussion of results and conclusion

This study examined the bi-directional long run relationship between the trade variables (exports, imports, and total trade of goods and services), energy consumption and CO_2 emission. 189 countries from six different regions, namely, Asia Pacific, Eastern Europe, the Americas, Middle East and North Africa (MENA), Sub Saharan Africa (SSA), and Western Europe, were selected. To achieve the aim of this study, the panel fully modified OLS was utilized taken the period of 1990–2011. From the country level, the results revealed that 75% of the countries in all regions showed a bi-directional positive long run relationship between the trade variables, energy consumption and CO_2 emission. On the other hand, 7% of countries showed negative long run relationship from trade variables to energy consumption and CO_2 emission with feedback, the other 7% of countries showed no significant relationship between the variables, and the remaining 11% of countries showed varied results.

The results of this study indicated that the feedback long run positive relationship between the trade variables, energy consumption

and CO_2 emission occurs only when the trade of goods and services occupy 40% or above of the country's total GDP (gross domestic product). In addition, this long run positive feedback relationship takes place as well in countries that reached high level of development. Hence, the greater the share of trade of goods and services to GDP and the higher the level of development the countries have, the more significant this relationship becomes. However, the negative or the non-significant long run relationship between the variables takes place generally in countries when the trade variables do not occupy a large share of their GDP and also when these countries are in the early development stages.

The panel results of all regions, with the exception of Eastern Europe, indicate the existence of a positive feedback long run relationship between the trade variables, energy consumption and CO_2 emission. This shows that the trade variables, energy consumption and CO_2 emission are jointly determined and concurrently influence each other in the long run. Despite the increase in the level of trade of goods and services, which can enhance economic growth in the investigated regions, it has an adverse effect on the environment since it has a long run effect in increasing energy consumption (80.9% comes from fossil fuels) and CO_2 emission. Thus, it is important for these investigated countries to implement trade related actions and policies to increase environmental protection. In addition, these countries should reduce their tariffs barriers on products and technologies that can promote energy savings, energy efficiency, and renewable energy. Furthermore, the researchers of this study suggest that the countries under investigation should increase their tariffs-barriers on products that can cause environmental damage.

Appendix A

See Tables 1 and 2.

Table 1
Panel unit root tests results.

Panel I: Levin, Lin & Chu				
Variables	***Level***		***First difference***	
	Intercept	***Intercept and trend***	***Intercept***	***Intercept and trend***
Asian Pacific				
LTD	0.32743	6.00958	−14.9321	−12.2581
LEX	0.07268	14.1206	−11.1335[a]	−10.4382[a]
LIM	−0.02384	20.2565	−10.5836[a]	−8.87711[a]
LEN	−1.20933	5.32467	−8.76197[a]	−9.86415[a]
LEM	−0.40065	16.8966	−11.0537[a]	−9.71129[a]
Eastern Europe				
LTD	1.52181	13.3182	−11.6817[a]	−8.00457[a]
LEX	0.43067	11.1842	−11.0187[a]	−7.68157[a]
LIM	2.38893	25.8788	−11.3806[a]	−8.93217[a]
LEN	2.16471	1.18050	−8.04375	−3.45000[a]
LEM	−0.68308	16.5599	−6.63658[a]	−3.72570[a]
The Americas				
LTD	1.41834	20.7051	−27.5287[a]	−15.9922[a]
LEX	16.2851	41.5736	−41.0483[a]	−44.3578[a]
LIM	2.60543	20.3879	−33.5403[a]	−28.1208[a]
LEN	4.22114	13.1122	−7.14216[a]	−5.24939[a]
LEM	12.7225	49.9087	−3.85110[a]	−7.36868[a]
MENA				
LTD	−0.27780	−0.44996	−17.0429[a]	−11.8943[a]
LEX	0.23932	0.77837	−16.7153[a]	−10.9550[a]
LIM	0.95974	−0.56906	−15.5856[a]	−10.5804[a]
LEN	8.97874	0.87446	−59.8762[a]	−35.9120[a]
LEM	1.56532	2.62479	−37.1601[a]	−21.7954[a]
SSA				
LTD	−1.17108	−0.29862	−8.08546[a]	−7.01273[a]
LEX	−1.36159	−1.02588	−9.30457[a]	−7.91727[a]
LIM	−0.15201	−0.77519	−5.88334[a]	−3.67996[a]
LEN	1.69835	−0.60720	−4.11575[a]	−2.44689[b]
LEM	1.21756	0.15024	−6.05916[a]	−6.19555[a]
Western Europe				
LTD	−1.30363	12.3016	−12.5818[a]	−12.8529[a]
LEX	−1.32539	7.34263	−12.4552[a]	−12.4504[a]
LIM	0.86514	9.35481	−12.7200[a]	−10.1196[a]
LEN	1.96356	6.41344	−11.0460[a]	−8.97361[a]
LEM	3.81046	6.42623	−8.87727[a]	15.7009[a]

Note: The unit root tests were done with individual trends and intercept for each variable, the optimal lag length were selected automatically using the Schwarz Information Criteria (SIC). The asterisks a, b and c indicate statistical significance at the 1 per cent, 5 per cent levels and 10 per cent respectively.

Table 2
Panel unit root tests results.

Panel II: Im, Pesaran and Shin				
Variablses	***Level***		***First difference***	
	Intercept	***Intercept and trend***	***Intercept***	***Intercept and trend***
Asian Pacific				
LTD	4.22627	6.00502	−13.3415[a]	−13.5844[a]
LEX	2.52092	5.61915	−11.6987[a]	−11.1454[a]
LIM	2.32871	4.23814	−11.4456[a]	−10.2782[a]
LEN	0.78604	2.79700	−11.7168[a]	−6.05695[a]
LEM	2.31153	4.85071	−11.2812[a]	−10.6757[a]
Eastern Europe				
LTD	3.06434	−1.11504	−12.2762[a]	−8.94436[a]
LEX	1.60243	1.99136	−11.1043[a]	−8.01781[a]
LIM	3.87999	−1.40545	−13.2047[a]	−6.49639[a]
LEN	−1.20137	1.60104	−6.16738[a]	−5.58175[a]
LEM	−0.68308	0.91833	−9.37972[a]	−7.52630[a]
The Americas				
LTD	−1.12036	2.23990	−27.6615[a]	−13.2931[a]
LEX	−0.38844	2.22064	−21.1982[a]	−24.3489[a]
LIM	−1.20398	1.92707	−22.1847[a]	−18.5125[a]
LEN	−0.64865	0.33544	−8.50760[a]	−5.67874[a]
LEM	−1.20043	−0.97881	−5.62490[a]	−8.48662[a]
MENA				
LTD	2.36581	0.42958	−4.40556[a]	−1.72040[c]
LEX	2.17001	0.35477	−4.18646[a]	−1.97709[c]
LIM	2.84124	0.14342	−4.01974[a]	−1.51573[c]
LEN	1.50294	1.20686	−12.4365[a]	−3.29639[a]
LEM	0.90664	0.56717	−6.84924[a]	−2.46639[b]
SSA				
LTD	2.66567	−1.46358	−7.65878[a]	−6.08289[a]
LEX	1.85438	−0.61414	−9.11830[a]	−7.78546[a]
LIM	4.07636	−0.03003	−7.28786[a]	−5.25777[a]
LEN	3.67401	5.50879	−8.64444[a]	−7.29699[a]
LEM	4.55793	1.15767	−8.57865[a]	−8.22428[a]
Western Europe				
LTD	3.32500	1.06344	−12.2432[a]	−10.0877[a]
LEX	2.41003	0.86609	−12.8105[a]	−10.9737[a]
LIM	4.65198	0.42558	−12.3832[a]	−11.9208[a]
LEN	5.18587	0.37961	−14.2021[a]	−11.4276[a]
LEM	5.13385	−0.38734	−7.30118[a]	−4.60263[a]

Note: The unit root tests were done with individual trends and intercept for each variable, the optimal lag length were selected automatically using the Schwarz Information Criteria (SIC). The asterisks a, b and c indicate statistical significance at the 1 per cent, 5 per cent levels and 10 per cent respectively.

Appendix B

See Tables 3–8.

Table 3
The results of panel group mean FMOLS for the Americas.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Argentina	0.161017[a]	0.151257[a]	0.169051[a]	5.821048[a]	6.183635[a]	5.471812[a]	6.341255[a]	0.135842[a]	0.156196[a]	0.145682[a]	6.705319[a]	6.705319[a]
	(10.13960)	(9.195700)	(9.572842)	(9.549347)	(8.677175)	(9.343971)	(9.308552)	(8.283094)	(12.18428)	(10.02250)	(7.466365)	(7.466365)
Aruba	0.638229[a]	0.696695[a]	0.550032[a]	1.321111[a]	0.723991[a]	0.570341[a]	1.466209[a]	0.615028[a]	1.257200[a]	1.439655[a]	1.165626[a]	1.609095[a]
	(7.040751)	(7.506985)	(7.629401)	(7.524222)	(7.138847)	(6.790476)	(7.212543)	(7.722481)	(8.034933)	(8.185973)	(7.642465)	(7.996123)
Bahamas	0.689860[a]	0.789536[a]	0.605197[a]	1.233742[a]	1.055047[a]	1.406657[a]	0.672163[a]	0.788456[a]	0.581187[a]	1.288559[a]	1.079675[a]	1.488092[a]
	(7.304774)	(5.847984)	(7.657798)	(8.650346)	(6.869495)	(9.809703)	(7.188339)	(5.973931)	(7.299828)	(7.790326)	(6.678078)	(8.200359)
Barbados	0.057426	0.048441	0.060755	0.889320	0.608332	1.173327	0.114723	0.113211	0.111943	1.546706	1.219181	1.874675
	(0.637751)	(0.475826)	(0.762260)	(0.802627)	(0.617599)	(0.950308)	(1.384754)	(1.188418)	(1.539512)	(1.553728)	(1.365390)	(1.700390)
Belize	1.073712[a]	1.011398[a]	1.104516[a]	0.810027[a]	0.786657[a]	0.829440[a]	0.838922[a]	0.758328[b]	0.890316[a]	0.794116[a]	0.756250[a]	0.826627[a]
	(7.074232)	(5.446453)	(8.766671)	(8.656341)	(6.959200)	(10.21212)	(3.619549)	(2.968668)	(4.234882)	(5.150555)	(4.502848)	(5.695913)
Bermuda	0.275700[a]	0.322675[a]	0.234653[a]	2.872547[a]	2.014329[a]	3.680109[a]	0.330520[a]	0.383834[a]	0.284288[a]	2.156243[a]	1.474048[a]	2.799712[a]
	(6.862190)	(4.650331)	(8.614199)	(6.839936)	(4.826972)	(8.242548)	(6.557821)	(4.306626)	(8.667973)	(6.026951)	(4.152796)	(7.378590)
Bolivia	0.408649[a]	0.358047[a]	0.462510[a]	2.297902[a]	2.998316[a]	2.018242[a]	0.351592[a]	0.307664[a]	0.398049[a]	2.647223[a]	2.998316[a]	2.324001[a]
	(10.53352)	(10.54916)	(9.467679)	(11.96785)	(11.66125)	(10.75173)	(10.88648)	(11.47956)	(9.513042)	(11.67060)	(11.66125)	(10.32574)
Brazil	0.047509[a]	0.047717[a]	0.047338[a]	11.71707[a]	11.75066[a]	11.68789[a]	0.045294[a]	0.045423[a]	0.045193[a]	12.91780[a]	12.94801[a]	12.89358[a]
	(3.724310)	(3.781153)	(3.672005)	(4.908995)	(4.973522)	(4.838119)	(3.917096)	(3.971021)	(3.868300)	(4.388551)	(4.451038)	(4.324416)
British Virgin Islands	0.374970[a]	0.360935[a]	0.392389[b]	1.455706[a]	1.560787[a]	1.318574[a]	0.393245[b]	0.378791[a]	0.411022[b]	1.289733[a]	1.383511[a]	1.167179[a]
	(3.021769)	(3.137567)	(2.846279)	(3.262137)	(3.371353)	(3.092025)	(2.909341)	(3.020583)	(2.740491)	(3.040229)	(3.139926)	(2.884148)
Cayman Islands	0.177587[a]	0.181430[a]	0.180916[a]	4.163446[a]	3.700325[a]	3.938031[a]	5.144685[a]	4.725134[a]	4.941172[a]	0.206126[a]	0.205588[a]	0.203243[a]
	(9.272132)	(7.205941)	(8.406655)	(8.129589)	(6.217612)	(7.196678)	(9.949271)	(8.120631)	(9.264642)	(6.050955)	(7.057236)	(5.094677)
Chile	0.418900[a]	0.407904[a]	0.413439[a]	0.446911[a]	0.434853[a]	0.440935[a]	1.691233[a]	1.707078[a]	1.698669[a]	1.614124[a]	1.629337[a]	1.621273[a]
	(4.482556)	(4.380679)	(4.432372)	(4.471957)	(4.358571)	(4.416427)	(4.425338)	(4.404879)	(4.417579)	(4.613745)	(4.587019)	(4.602975)
Colombia	0.348920[a]	0.389422[a]	0.367669[a]	0.336079[a]	0.371514[a]	0.352815[a]	2.617043[a]	2.411911[a]	2.521432[a]	2.750307[a]	2.532281[a]	2.648706[a]
	(7.794159)	(9.923973)	(8.693313)	(9.413142)	(11.07959)	(10.25214)	(7.943103)	(9.977910)	(8.841334)	(9.559770)	(11.28484)	(10.48054)
Costa Rica	0.071656[a]	0.079578[a]	0.076428[a]	0.102368[a]	0.110419[a]	0.107344[a]	9.453687[a]	9.139574[a]	9.271084[a]	8.439375[a]	8.220235[a]	8.308251[a]
	(3.663805)	(3.946252)	(3.831101)	(7.071518)	(8.389727)	(7.763685)	(3.722815)	(4.211991)	(3.992356)	(6.994548)	(8.697185)	(7.905751)
Cuba	0.230612[a]	0.232539[a]	0.231809[a]	0.253675[a]	0.257408[a]	0.255803[a]	4.182650[a]	4.166101[a]	4.173869[a]	3.885693[a]	3.837201[a]	3.860667[a]
	(15.99800)	(17.47332)	(16.91126)	(25.93676)	(27.87011)	(27.71101)	(15.81256)	(4.166101)	(16.57606)	(25.76672)	(27.92726)	(27.67422)
Dominica	0.081828[c]	0.086772	0.084655	0.082229	0.086414	0.084343	4.368701[c]	3.153236	3.749870	2.851635	2.170849	3.860667
	(1.833479)	(1.540625)	(1.687985)	(1.554930)	(1.318020)	(1.428312)	(2.069851)	(1.726458)	(1.909011)	(1.487850)	(1.349326)	(1.425438)
Dominican Republic	1.225640[a]	0.927445[a]	1.061279[a]	1.152632[a]	0.847989[a]	0.982005[a]	0.620091[a]	0.914764[a]	0.792327[a]	0.653566[a]	0.930615[a]	0.815667[a]
	(4.317625)	(5.633036)	(5.312227)	(4.459811)	(4.913107)	(4.950669)	(4.169262)	(5.594774)	(5.278118)	(4.076255)	(4.779333)	(4.721126)
Ecuador	0.334319[a]	0.302883[a]	0.316699[a]	0.348453[a]	0.317299[a]	0.331054[a]	2.773877[a]	3.003228[a]	2.902882[a]	2.642978[a]	2.852478[a]	2.760916[a]
	(8.692868)	(7.843654)	(8.277118)	(8.661901)	(7.919591)	(8.313384)	(9.184160)	(8.214998)	(8.702016)	(9.433475)	(8.579290)	(9.033848)
El Salvador	0.326086[a]	0.318020[a]	0.322477[a]	0.400910[a]	0.387879[a]	0.394977[a]	2.979149[a]	3.075872[a]	3.025900[a]	2.468939[a]	2.541572[a]	2.504411[a]
	(14.39023)	(16.35769)	(16.15686)	(15.97285)	(15.55585)	(16.68432)	(13.17928)	(15.31126)	(15.02378)	(14.91315)	(14.76074)	(15.78823)
French Guiana	0.443219[a]	0.447248[a]	0.448113[a]	0.462635[a]	0.469712[a]	0.469244[a]	2.102397[a]	1.978349[a]	2.023684[a]	2.118724[a]	2.025458[a]	2.059172[a]
	(13.94263)	(8.988338)	(10.59016)	(26.99623)	(13.37187)	(17.18988)	(13.75631)	(8.795532)	(10.40001)	(28.34627)	(13.72525)	(17.82448)
Grenada	0.072822	0.022444	0.061688	0.305599[c]	0.122356	0.187836	0.007264	0.776119	0.719822	0.170440	0.170467	0.768584
	(1.820010)	(0.309273)	(1.001612)	(1.895287)	(0.364347)	(0.691548)	(0.005938)	(0.618012)	(1.323454)	(0.447534)	(0.400861)	(0.486732)
Guadeloupe	0.788748[b]	0.668361[a]	0.767211[a]	0.863893[a]	0.696480[a]	0.806912[a]	0.595795[a]	1.323787[a]	1.061994[a]	0.623547[a]	1.304246[a]	1.059465[a]
	(2.668204)	(6.591671)	(5.183594)	(3.105425)	(7.473469)	(6.025432)	(2.607725)	(7.249414)	(5.676621)	(2.956014)	(8.240248)	(6.527142)
Guatemala	0.519177[a]	0.709698[a]	0.667150[a]	0.539491[a]	0.754502[a]	0.703203[a]	1.716208[a]	1.343023[a]	1.425542[a]	1.435751[a]	1.210388[a]	1.258491[a]
	(5.819969)	(10.24932)	(9.112380)	(4.791066)	(8.497083)	(7.264982)	(6.172185)	(11.38526)	(9.927211)	(5.404740)	(9.810177)	(8.525243)
Guyana	0.559585[a]	0.512714[a]	0.532778[a]	0.521912	0.476642[a]	0.495916[a]	1.634559[a]	1.817260[a]	1.740499[a]	1.833549[a]	2.038075[a]	1.952564[a]
	(10.60167)	(11.51723)	(11.37564)	(14.55127)	(17.63654)	(17.04263)	(10.84292)	(11.71827)	(11.64018)	(14.78497)	(18.24978)	(17.57795)
Haiti	0.321109[a]	0.267265[a]	0.288659[a]	0.326053[a]	0.272865[a]	0.294120[a]	1.977402[a]	2.258026[a]	2.135027[a]	1.967519[a]	2.250185[a]	2.126448[a]
	(3.784309)	(3.508511)	(3.626011)	(3.921207)	(3.679452)	(3.788956)	(4.052855)	(3.678941)	(3.840473)	(4.128727)	(3.790803)	(3.942639)
Honduras	0.363241[a]	0.304771[a]	0.319792[a]	0.313762[a]	0.261996[a]	0.275380[a]	2.582060[a]	3.051633[a]	2.920465[a]	3.016153[a]	3.551951[a]	3.403372[a]
	(9.668890)	(8.702701)	(8.940281)	(9.887505)	(8.594946)	(8.929589)	(10.24779)	(9.590094)	(9.778470)	(10.65757)	(9.603373)	(9.893264)
Jamaica	0.354205[a]	0.329599[a]	0.340177[a]	0.259802[a]	0.243016[a]	0.250261[a]	2.730410[a]	2.965238[a]	25.48403[a]	3.571622[a]	3.899578[a]	3.756787[a]
	(20.25946)	(23.51388)	(22.47148)	(12.96890)	(15.52699)	(14.46464)	(22.10874)	(25.48403)	(24.47805)	(14.13256)	(17.07367)	(15.46392)
Martinique	0.122841[b]	0.100552[b]	0.109195[b]	0.129043[b]	0.105638[b]	0.114704[b]	3.803821[a]	4.814754[a]	4.346084[a]	3.852280[a]	4.874541[a]	4.401984[a]
	(2.517336)	(2.640500)	(2.573099)	(2.645951)	(2.772833)	(2.702932)	(3.829857)	(4.016809)	(3.923400)	(4.236778)	(4.462394)	(4.352744)

Table 3 (*continued*)

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Mexico	0.580509[a]	0.562543[a]	0.576424[a]	0.502829[a]	0.458588[a]	0.471301[a]	1.056185[a]	1.502687[a]	1.406839[a]	1.574157[a]	1.932201[a]	1.853862[a]
	(3.948749)	(6.351368)	(5.849004)	(4.915414)	(6.686104)	(6.383484)	(3.416856)	(5.722784)	(5.254009)	(4.809717)	(5.930367)	(5.859353)
Nicaragua	0.108676[a]	0.114448[a]	0.111723[a]	0.121890[a]	0.128455[a]	0.125367[a]	8.288786[a]	8.005511[a]	8.132527[a]	7.545491[a]	7.279709[a]	7.399116[a]
	(8.503326)	(9.487367)	(8.987796)	(9.323506)	(10.70492)	(9.990743)	(8.442461)	(9.647341)	(9.047413)	(9.202172)	(10.77410)	(9.977192)
Panama	0.207239[a]	0.222710[a]	0.217587[a]	0.178899[a]	0.191938[a]	0.187699[a]	4.135007[a]	3.872091[a]	3.954672[a]	4.897445[a]	4.577488[a]	4.678072[a]
	(7.509463)	(7.240614)	(7.346318)	(7.303420)	(6.799204)	(6.978651)	(8.352941)	(8.394904)	(8.395719)	(9.160372)	(8.994832)	(9.076203)
Paraguay	0.223557[a]	0.230490[a]	0.227007[a]	0.286564[a]	0.296583[a]	0.291569[a]	4.291433[a]	4.140776[a]	4.220078[a]	3.461072[a]	3.359080[a]	3.412998[a]
	(11.89135)	(11.71161)	(11.99940)	(13.58894)	(13.94156)	(14.00671)	(12.10615)	(13.33007)	(12.83701)	(12.94946)	(14.41340)	(13.87506)
Peru	0.220583[a]	0.221760[a]	0.221908[a]	0.205981[a]	0.207685[a]	0.207581[a]	3.627895[a]	3.807609[a]	3.720497[a]	3.216963[a]	3.435547[a]	3.329804[a]
	(5.455234)	(6.523049)	(5.995699)	(3.806065)	(4.412337)	(4.115453)	(5.599488)	(6.735021)	(6.178866)	(3.808137)	(4.475140)	(4.149965)
Puerto Rico	0.185569[a]	0.214545[a]	0.200403[a]	0.212131[a]	0.242925[a]	0.227980[a]	4.852685[a]	4.049737[a]	4.445155[a]	4.149691[a]	3.432314[a]	3.784051[a]
	(8.626602)	(6.306771)	(7.519968)	(8.742161)	(6.121479)	(7.400955)	(10.03819)	(7.911070)	(9.252120)	(10.40855)	(7.786121)	(9.298583)
St Kitts	0.353528[a]	0.420949[a]	0.381286[a]	0.294424[a]	0.351703[a]	0.318004[a]	2.038209[a]	1.733231[a]	1.899716[a]	2.418701[a]	2.057041[a]	2.254851[a]
	(4.659889)	(4.812057)	(4.722181)	(3.969829)	(4.162976)	(4.046627)	(5.700685)	(5.971610)	(5.816731)	(4.902760)	(5.106008)	(4.985968)
St Lucia	1.402235[a]	1.166888[a]	1.254484[a]	1.357763[a]	1.132694[a]	1.218004[a]	0.503353[a]	0.683915[a]	0.611704[a]	0.534123[a]	0.716349[a]	0.643532[a]
	(4.962099)	(5.624121)	(5.598884)	(5.082256)	(5.752409)	(5.745013)	(4.655097)	(5.395922)	(5.409739)	(4.881509)	(5.583933)	(5.636774)
St Vincent and the Grenadines	1.458587[a]	1.040634[a]	1.200565[a]	1.440594[a]	1.029451[a]	1.187033[a]	0.477589[a]	0.758413[a]	0.633884[a]	0.477548[a]	0.759563[a]	0.634478[a]
	(3.784237)	(4.669271)	(4.320174)	(3.738064)	(4.602152)	(4.262849)	(4.033628)	(5.027713)	(4.729791)	(3.996397)	(4.997243)	(4.698353)
Suriname	1.572275[a]	0.871283[a]	1.104139[a]	1.460115[a]	0.807898[a]	1.024668[a]	0.551704[a]	0.836475[a]	0.727713[a]	0.594534[a]	0.836475[a]	0.788702[a]
	(8.554994)	(4.960256)	(6.366061)	(7.970106)	(4.753562)	(6.012797)	(8.280889)	(4.740097)	(6.314877)	(8.427464)	(4.740097)	(6.252711)
Trinidad and Tobago	0.045148[a]	0.042943[a]	0.044146[a]	0.001755	0.000295	0.001044	14.02878[a]	13.38743[a]	13.70962[a]	3.395791	0.198163[a]	13.70962[a]
	(4.173478)	(3.812948)	(3.996205)	(0.256025)	(0.042692)	(0.151409)	(4.083366)	(3.720436)	(3.904849)	(0.202233)	(0.011822)	(3.904849)
Uruguay	0.455235[a]	0.538675[a]	0.488919[a]	0.581230[a]	0.691239[a]	0.625652[a]	2.162812[a]	1.772949[a]	2.000055[a]	1.713956[a]	1.405330[a]	1.584924[a]
	(21.51701)	(13.32244)	(19.90124)	(26.18146)	(16.02858)	(25.97360)	(19.47064)	(13.01383)	(18.64082)	(23.74132)	(15.61953)	(24.38732)
US Virgin Islands	0.155978[a]	0.164338[a]	0.160213[a]	0.094872[a]	0.094510[a]	0.089568[a]	4.922863[a]	4.758730[a]	4.837509[a]	7.030244[a]	6.710527[a]	6.866232[a]
	(5.035569)	(5.135388)	(5.090711)	(3.872208)	(3.839801)	(4.987324)	(5.836015)	(6.186189)	(6.021537)	(4.449229)	(4.537311)	(4.501271)
Venezuela	0.019367	0.030542	0.025943	0.053814	0.049792	0.052386	0.565814	0.778875	0.670258	1.841481	2.250284	2.039198
	(0.135022)	(0.226559)	(0.185924)	(1.059991)	(1.066557)	(1.076009)	(0.431629)	(0.529820)	(0.483889)	(0.483935)	(0.534963)	(0.512517)
Canada	0.096443[b]	0.090256[a]	0.094172[a]	0.115403[a]	0.100274[a]	0.107478[a]	3.927855[a]	6.093519[a]	5.136701[a]	5.085139[a]	7.175658[a]	6.247158[a]
	(2.384682)	(3.598029)	(3.032839)	(3.747658)	(5.633572)	(4.744690)	(3.327031)	(5.352443)	(4.490446)	(3.980451)	(6.051954)	(5.177235)
USA	0.068533[a]	0.072612[a]	0.070332[a]	0.068265[a]	0.072039[a]	0.069940[a]	13.93408[a]	13.25089[a]	13.64389[a]	14.03676[a]	13.27465[a]	13.71016[a]
	(10.50971)	(12.05770)	(11.17859)	(12.66431)	(12.35118)	(12.72634)	(10.65987)	(12.22141)	(11.38073)	(12.70747)	(12.72788)	(12.94788)
Panel	0.4102564[a]	0.3739758[a]	0.385949[a]	1.0791603[a]	1.0105844[a]	1.036103[a]	3.0285544[a]	2.920561[a]	3.4609433[a]	3.0302590[a]	3.1482641[a]	3.534783[a]
	(7.198084)	(7.133890)	(7.434029)	(8.019035)	(7.255310)	(8.126764)	(7.244171)	(7.141404)	(7.703129)	(7.998423)	(7.8540381)	(8.198469)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the *t*-statistics.

Table 4
The results of panel group mean FMOLS for the Asian Pacific.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Afghanistan	−0.022364	−0.032006	−0.020033	−1.667220	−1.774521	−1.647133	−0.035217	−0.046730	−0.032301	−1.649090	−1.719841	−1.639917
	(−0.368540)	(−0.512613)	(−0.335468)	(−1.187957)	(−1.154424)	(−1.318795)	(−0.482174)	(−0.620372)	(−0.449649)	(−1.346050)	(−1.466719)	(−1.315727)
Armenia	−0.002486	−0.001833	−0.002742	−0.002486	1.234755	0.886158	−0.008225	1.070370[a]	−0.008939	−0.008939	−0.386574	−0.009200
	(−0.141001)	(−0.102745)	(−0.156447)	(−0.141001)	(0.264386)	(0.181136)	(−0.447749)	(16.37688)	(−0.493108)	(−0.493108)	(−0.098573)	(−0.510528)
Azerbaijan	−0.044321[a]	−0.041750[a]	−0.047587[a]	−14.43908[a]	−14.14277[a]	−14.35367[a]	−0.054940[a]	−0.053234[a]	−0.056207[a]	−14.75742[a]	−15.33712[a]	−14.01010[a]
	(−3.665772)	(−3.345576)	(−4.044123)	(−6.584395)	(−3.883018)	(−6.990286)	(−5.725747)	(−6.056808)	(−5.220437)	(−7.328666)	(−7.669437)	(−6.642801)
Bangladesh	0.482972[a]	0.461555[a]	0.497111[a]	2.044846[a]	2.148263[a]	1.976821[a]	0.482396[a]	0.461011[a]	0.496480[a]	2.051707[a]	2.154054[a]	1.984276[a]
	(25.74568)	(27.35553)	(23.45469)	(26.66127)	(27.85822)	(24.52546)	(25.97458)	(27.88414)	(23.54739)	(26.59156)	(28.16531)	(24.29380)
Bhutan	0.512640[a]	0.516929[a]	0.508390[a]	0.512640[a]	1.761357[a]	1.709838[a]	0.231622[a]	0.223903[a]	0.237425[a]	2.561230[a]	2.551630[a]	2.568157[a]
	(7.744201)	(9.792329)	(6.671108)	(7.744201)	(9.681532)	(6.926766)	(3.095123)	(2.981413)	(3.201846)	(3.258967)	(3.080859)	(3.378563)
Brunei	1.160944[a]	0.870018[a]	2.116336[a]	0.849287[a]	1.129783[a]	0.382665[a]	1.127052[a]	0.843354[a]	2.052187[a]	0.879585[a]	1.172759[a]	0.392562[a]
	(12.36607)	(11.30526)	(4.684347)	(14.24921)	(11.68746)	(5.429554)	(12.70115)	(11.44006)	(4.711559)	(14.65056)	(11.79042)	(5.443024)
Cambodia	0.424480[a]	0.400372[a]	0.440169[a]	2.044006[a]	2.137139[a]	1.975594[a]	0.417232[a]	0.432789[a]	0.393374[a]	1.943433[a]	2.102684[a]	2.010686[a]
	(9.101812)	(8.679409)	(9.087425)	(10.89294)	(10.86618)	(10.71820)	(9.333518)	(9.337723)	(8.871861)	(10.58519)	(10.79484)	(10.78176)
China	0.388810[a]	0.384808[a]	0.393003[a]	2.404124[a]	2.430681[a]	2.374532[a]	0.371782[a]	0.367904[a]	0.375839[a]	2.483523[a]	2.511308[a]	2.452517[a]
	(11.71923)	(11.75516)	(11.52671)	(11.79654)	(11.71869)	(11.71168)	(10.30163)	(10.31511)	(10.17953)	(10.34432)	(10.27576)	(10.30042)
Fiji	0.656260[a]	0.806105[a]	0.722366[a]	0.894600[a]	0.744701[a]	1.020192[a]	0.797558[a]	0.893878[a]	0.722871[a]	0.797558[a]	0.667898[a]	0.908712[a]
	(3.569099)	(3.218375)	(3.399326)	(4.679659)	(3.862385)	(5.275128)	(3.303952)	(3.172638)	(3.452241)	(3.303952)	(3.681047)	(4.883998)
French Polynesia	0.326108[b]	0.180617	0.323485[a]	1.019249[b]	0.205717	1.370663[a]	0.299804[b]	0.122295	0.308917[a]	0.614236	−0.060569	0.910039[c]
	(2.487554)	(0.672899)	(3.685320)	(2.300448)	(0.472471)	(2.911037)	(2.107943)	(0.438422)	(3.231712)	(1.504686)	(−0.155873)	(2.053765)
Hong Kong	0.682203[a]	0.681228[a]	0.682088[a]	1.359540[a]	1.375299[a]	1.343542[a]	0.619382[a]	0.619460[a]	0.618195[a]	0.619382[a]	1.514907[a]	1.471831[a]
	(9.033447)	(9.720558)	(8.373281)	(9.132132)	(9.846989)	(8.446995)	(7.987398)	(8.780119)	(7.294183)	(7.987398)	(9.589741)	(7.922140)
India	0.271798[a]	0.278007[a]	0.266387[a]	3.665967[a]	3.578667[a]	3.743879[a]	0.262156[a]	0.268120[a]	0.256959[a]	3.790485[a]	3.699604[a]	3.871563[a]
	(36.79999)	(32.93123)	(39.66239)	(36.33800)	(32.53818)	(39.11251)	(28.44441)	(26.06890)	(30.26975)	(28.19390)	(25.83887)	(29.96423)
Indonesia	0.241625[a]	0.236004[a]	0.247276[a]	3.943261[a]	3.977576[a]	3.907627[a]	0.250246[a]	0.244604[a]	0.255904[a]	3.845518[a]	3.883549[a]	3.805651[a]
	(11.74952)	(10.19228)	(14.29484)	(11.67845)	(10.10396)	(14.18599)	(13.34675)	(11.45165)	(16.51673)	(13.08891)	(11.20547)	(16.13956)
Japan	0.155201[a]	0.168399[a]	0.113128[b]	2.041518[a]	1.876897[a]	2.251151[a]	0.155201[a]	0.185508[a]	0.129760[a]	3.209001[a]	1.876897[a]	3.576184[a]
	(3.693250)	(2.884291)	(2.435683)	(3.003133)	(2.921245)	(3.026472)	(3.693250)	(3.970534)	(3.355550)	(4.422285)	(2.921245)	(4.221370)
Kazakhstan	−0.036600[c]	−0.033669[c]	−0.039380[c]	−9.990207[b]	−10.23167[b]	−9.843479[b]	−0.033519	−0.030344	−0.036711	−7.311759[c]	−7.438843[c]	−7.270017[c]
	(−1.967849)	(−1.862820)	(−2.070900)	(−2.467644)	(−2.402508)	(−2.553704)	(−1.444276)	(−1.346890)	(−1.543591)	(−1.965508)	(−1.907518)	(−2.044302)
Kiribati	0.790007[a]	0.522174[b]	0.738987[a]	1.166456[a]	0.755929[b]	1.260788[a]	0.801814[a]	0.748679[a]	0.535765[b]	1.154862[a]	0.753729[b]	1.247351[a]
	(7.414433)	(2.310412)	(8.341316)	(6.531784)	(2.217072)	(7.235941)	(7.776853)	(8.662445)	(2.375538)	(6.685990)	(2.225082)	(7.402693)
Kyrgyzstan	−0.046436[a]	−0.046488[a]	−0.046247[a]	−17.81968[a]	−17.48178[a]	−18.06805[a]	−0.099527[a]	−0.099219[a]	−0.099281[a]	−6.419141[a]	−6.338592[a]	−6.475753[a]
	(−6.040209)	(−5.820877)	(−6.173125)	(−7.996084)	(−7.733387)	(−8.142815)	(−3.795395)	(−3.751716)	(−3.810175)	(−5.306913)	(−5.259000)	(−5.310492)
Laos	0.342089[a]	0.330460[a]	0.349927[a]	2.899135[a]	2.836610[a]	2.899135[a]	0.386232[a]	0.373593[a]	0.394685[a]	2.992088[a]	2.491293[a]	2.543758[a]
	(30.08990)	(26.41250)	(30.91307)	(30.92872)	(31.61436)	(30.92872)	(20.69536)	(18.98939)	(21.16583)	(27.28592)	(22.38082)	(22.04819)
Macau	0.387270[a]	0.363704[a]	0.435158[a]	1.910316[a]	2.016714[a]	1.745526[a]	0.233193[b]	0.260436[b]	0.220719[b]	1.950688[a]	2.050575[a]	1.803966[a]
	(4.949115)	(4.816124)	(5.310056)	(6.232527)	(6.083109)	(1.745526)	(2.521232)	(2.640979)	(2.501893)	(3.475473)	(3.377235)	(3.702556)
Malaysia	0.509354[a]	0.473830[a]	0.553996[a]	1.913407[a]	2.051130[a]	1.760988[a]	0.519551[a]	0.482794[a]	0.565908[a]	1.860528[a]	1.995469[a]	1.711197[a]
	(18.68441)	(17.57998)	(19.07095)	(18.34246)	(17.27496)	(18.69533)	(16.04960)	(15.26428)	(16.36429)	(15.74254)	(14.90158)	(16.16511)
Maldives	1.042592[a]	1.214839[a]	0.905175[a]	0.840498[a]	0.747863[a]	0.928304[a]	1.043675[a]	1.216197[a]	0.905981[a]	0.837429[a]	0.745640[a]	0.924402[a]
	(6.964244)	(8.482467)	(5.944122)	(7.423789)	(8.930314)	(6.305307)	(6.890964)	(8.401523)	(5.884973)	(7.303001)	(8.783708)	(6.211669)
Mongolia	−3.513743[c]	−0.035410	−0.040454	−2.5848640	−3.545017	−3.519306	−0.033701	−0.031136	−0.035517	−3.494712	−3.549034[c]	−3.530554[c]
	(−1.813305)	(−0.881248)	(−0.950203)	(−1.458473)	(−1.543580)	(−1.513628)	(−0.804986)	(−0.747360)	(−0.846460)	(−1.477653)	(−1.906914)	(−1.863871)
Myanmar	0.565152[a]	0.436600[a]	0.666856[a]	1.485472[a]	2.077810[a]	0.941558[a]	0.565486[a]	0.435340[a]	0.678181[a]	1.436704[a]	1.988878[a]	0.931184[a]
	(6.342157)	(9.083999)	(3.554651)	(7.043234)	(10.51485)	(3.501512)	(5.487917)	(7.019332)	(3.496834)	(5.924639)	(8.253320)	(3.297032)
Nauru	0.036282	−0.006153	0.042763[c]	3.361489	0.725585	4.013214	0.028783	−0.012639	0.035918	1.877439	−0.469484	2.484208
	(1.514481)	(−0.190940)	(1.993321)	(1.159993)	(0.215118)	(1.348996)	(1.221560)	(−0.387544)	(1.665378)	(0.719761)	(−0.154157)	(0.915942)
Nepal	0.655194[a]	0.713043[a]	0.603839[a]	1.366595[a]	1.134479[a]	1.468483[a]	0.595365[a]	0.722934[a]	0.534601[a]	1.317971[a]	1.187374[a]	1.356911[a]
	(8.117184)	(6.061972)	(7.544930)	(8.548783)	(7.578680)	(7.579621)	(5.806051)	(7.619851)	(4.920929)	(5.999069)	(8.341504)	(8.948507)
New Caledonia	0.446823[a]	0.475609[a]	0.430081[a]	2.137452[a]	1.965555[a]	2.213151[a]	0.502957[a]	0.539510[a]	0.482669[a]	1.889616[a]	1.759891[a]	1.946031[a]
	(11.76676)	(11.44281)	(10.88180)	(11.53038)	(9.783457)	(11.20772)	(9.754041)	(10.57416)	(8.931420)	(9.904581)	(9.154922)	(9.505013)
North Korea	−0.030176	−0.029624	−0.030417	−4.576080	−4.346469	−4.708946	−0.029703	−0.029176	−0.029933	−4.339539	−4.128377	−4.462384
	(−1.360790)	(−1.301344)	(−1.393638)	(−1.069003)	(−1.015159)	(−1.098830)	(−1.299965)	(−1.245977)	(−1.329761)	(−1.019907)	(−0.971030)	(−1.047069)

Table 4 (*continued*)

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Pakistan	0.267879[a]	0.283833[a]	0.254957[a]	3.635842[a]	3.407135[a]	3.802291[a]	0.264546[a]	0.280829[a]	0.251622[a]	3.609399[a]	3.380256[a]	3.776483[a]
	(17.72586)	(14.34614)	(16.60091)	(18.19006)	(14.70778)	(16.70351)	(12.38797)	(11.35719)	(11.72840)	(12.66775)	(11.75427)	(11.80325)
Papua New Guinea	0.282980[a]	0.288662[a]	0.274984[a]	2.875347[a]	2.938243[a]	2.808937[a]	0.237746[a]	0.247159[a]	0.229577[a]	2.777425[a]	2.926135[a]	2.854698[a]
	(5.226254)	(5.714395)	(4.679942)	(6.807126)	(7.249467)	(6.117851)	(3.459338)	(3.766640)	(3.201714)	(4.213170)	(4.903091)	(4.614680)
Philippines	0.268317[a]	0.256560[a]	0.278494[a]	3.587591[a]	3.732717[a]	3.463780[a]	0.261266[a]	0.248945[a]	0.271906[a]	3.678330[a]	3.822563[a]	3.555388[a]
	(15.87975)	(14.83409)	(16.64573)	(15.92152)	(14.57270)	(17.05031)	(15.09125)	(13.63900)	(16.38721)	(13.78382)	(12.33269)	(15.27769)
Samoa	0.243798[a]	0.195914[a]	0.268596[a]	3.933223[a]	4.612644[a]	3.642303[a]	0.172598[a]	0.137688[a]	0.190287[a]	4.898217[a]	5.662811[a]	4.571491[a]
	(14.12495)	(8.415445)	(19.74592)	(14.91988)	(8.449178)	(21.55902)	(6.550379)	(5.060458)	(7.457844)	(7.895786)	(5.686184)	(9.329961)
Singapore	0.752214[a]	0.737349[a]	0.769414[a]	1.282454[a]	1.306760[a]	1.255354[a]	0.673180[a]	0.659850[a]	0.688608[a]	1.418282[a]	1.445069[a]	1.388424[a]
	(13.25459)	(13.12968)	(13.37888)	(12.56069)	(12.47878)	(12.62233)	(11.22825)	(11.11938)	(11.34571)	(10.78004)	(10.70488)	(10.84687)
Solomon Islands	0.121414[a]	0.128451[a]	0.114027[a]	6.460909[a]	5.299906[a]	7.390815[a]	0.102597[a]	0.122719[a]	0.111110[a]	6.414668[a]	5.264420[a]	7.333809[a]
	(4.830177)	(3.728592)	(5.872162)	(5.481690)	(4.194008)	(6.635402)	(5.634157)	(3.343652)	(5.274143)	(5.191735)	(4.007983)	(6.249212)
South Korea	0.364854[a]	0.359326[a]	0.387223[a]	2.618807[a]	2.663719[a]	2.576115[a]	0.288573[a]	0.284100[a]	0.292042[a]	3.296605[a]	3.349102[a]	3.247296[a]
	(15.54541)	(16.02048)	(19.24990)	(14.80365)	(15.31968)	(13.53499)	(12.90459)	(13.03224)	(12.23498)	(12.07761)	(12.21883)	(11.49922)
Sri Lanka	0.307355[a]	0.317741[a]	0.299717[a]	3.057895[a]	3.021008[a]	3.082523[a]	0.360238[a]	0.373991[a]	0.350265[a]	2.482656[a]	2.466332[a]	2.492222[a]
	(12.47248)	(15.63833)	(10.81386)	(12.94245)	(16.32199)	(11.14527)	(8.958015)	(10.67776)	(8.002939)	(9.326755)	(11.13535)	(8.296601)
Taiwan	0.579668[a]	0.568678[a]	0.591192[a]	1.619796[a]	1.671237[a]	1.583873[a]	0.564255[a]	0.553194[a]	0.575746[a]	1.510839[a]	1.538959[a]	1.480275[a]
	(11.51786)	(11.84818)	(11.08878)	(11.71007)	(19.13874)	(11.18115)	(7.764625)	(7.884878)	(7.619892)	(7.783148)	(7.877636)	(7.627911)
Tajikistan	−0.016860	−0.016843	−0.016701	−12.74164	−11.96473	−13.21491	−0.037894	−0.036708	−0.037728	−4.086452	−3.749112	−4.291245
	(−1.338542)	(−1.297793)	(−1.351848)	(−1.528357)	(−1.464465)	(−1.563180)	(−1.170347)	(−1.077773)	(−1.142193)	(−1.252824)	(−1.171414)	(−1.298651)
Thailand	0.550983[a]	0.521711[a]	0.577885[a]	1.778847[a]	1.878831[a]	1.683454[a]	0.503657[a]	0.477600[a]	0.527825[a]	1.914942[a]	2.015171[a]	1.820236[a]
	(20.07441)	(19.82443)	(15.82420)	(20.27342)	(20.41463)	(15.56343)	(15.62624)	(15.04970)	(13.83312)	(15.58473)	(15.34835)	(13.56217)
Tonga	0.449476[a]	0.550508[b]	0.409442[a]	1.697673[a]	0.938040[b]	1.933377[a]	0.448486[a]	0.530597[b]	0.413355[a]	1.653721[a]	0.990530[b]	1.861229[a]
	(4.195662)	(2.679020)	(4.524618)	(4.044033)	(2.461292)	(4.441529)	(4.409396)	(2.833211)	(4.777669)	(4.441538)	(2.749823)	(4.903109)
Turkmenistan	0.132832[b]	0.137502[a]	0.128183[b]	3.958969[a]	4.135209[a]	3.778198[a]	0.115500[b]	0.120044[b]	0.111022[b]	4.166202[a]	4.365856[a]	3.961495[a]
	(2.750018)	(3.024842)	(2.518303)	(3.559040)	(3.965541)	(3.208175)	(2.470236)	(2.715093)	(2.262613)	(3.347548)	(3.728729)	(3.014482)
Uzbekistan	0.019483[a]	0.019374[a]	0.019565[a]	36.62982[a]	37.19682[a]	36.06761[a]	0.015180[a]	0.015112[a]	0.015228[a]	43.07788[a]	43.73096[a]	42.43243[a]
	(4.270400)	(4.327532)	(4.202186)	(5.603131)	(5.662146)	(5.530664)	(3.436209)	(3.477576)	(3.387408)	(4.512909)	(4.561197)	(4.458074)
Vanuatu	0.595037[a]	0.582983[a]	0.603407[a]	1.209692[a]	1.164865[a]	1.248371[a]	0.674770[a]	0.655263[a]	0.687524[a]	1.094929[a]	1.043781[a]	1.139148[a]
	(4.885822)	(4.240072)	(5.320330)	(5.225490)	(4.838870)	(5.344576)	(5.553967)	(4.650347)	(6.211814)	(6.025270)	(5.449856)	(6.219222)
Vietnam	0.477318[a]	0.467916[a]	0.473213[a]	2.094799[a]	2.117457[a]	2.075896[a]	0.475451[a]	0.470141[a]	0.479570[a]	2.083008[a]	2.105073[a]	2.064618[a]
	(32.79893)	(34.66232)	(34.99872)	(37.77776)	(37.55287)	(34.90168)	(33.30321)	(31.91320)	(32.30735)	(35.75685)	(34.38296)	(34.24885)
Panel	0.273916[a]	0.341558[a]	0.3839452[a]	1.1739596[a]	1.1513986[a]	1.1909584[a]	0.3376000[a]	0.3569936[a]	0.3502653[a]	1.8633263[a]	1.7683165[a]	1.8881687[a]
	(9.132763)	(8.646864)	(9.065535)	(9.386156)	(9.166622)	(8.915308)	(7.676755)	(7.098427)	(7.224069)	(7.910947)	(7.461463)	(7.674598)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the *t*-statistic.

Table 5
The results of panel group mean FMOLS for Eastern Europe.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Albania	−0.106639	−0.096976[a]	−0.109154[a]	−4.298932[a]	5.270474[a]	3.926716[a]	1.192166	0.063391	1.040342	0.292154	1.539362	1.040342
	(−2.708714)	(−3.433152)	(−2.462231)	(−3.974799)	(4.396049)	(3.751306)	(0.930137)	(0.948832)	(0.847696)	(1.583966)	(1.057396)	(0.847696)
Belarus	−0.018101[a]	−0.018188[a]	−0.018019[a]	−24.15806[a]	−24.06603[a]	−24.25496[a]	−0.022043[a]	−0.022166[a]	−0.021928[a]	−23.74938[a]	−23.68387[a]	−23.82035[a]
	(−2.551365)	(−2.562662)	(−2.541945)	(−2.719758)	(−2.724134)	(−2.717137)	(−2.949559)	(−2.965418)	(−2.936188)	(−3.313467)	(−3.326500)	(−3.303158)
Bosnia – Herzegovina	0.009844	0.017066	0.006309	1.039480	1.603773	0.802725	0.004884	0.015020	2.718459	0.291432	0.648142	0.143365
	(0.248375)	(0.448641)	(0.156891)	(0.439774)	(0.652571)	(0.345135)	(0.082844)	(0.264829)	(0.000490)	(0.167552)	(0.356489)	(0.083952)
Bulgaria	−0.011624	−0.012148	−0.011182	−20.61340[c]	−20.51811[c]	−20.70443[c]	−0.020333[a]	−0.020779[a]	−0.019929[a]	−22.87166[b]	−22.63967[a]	−23.08567[a]
	(−1.132021)	(−1.171455)	(−1.099835)	(−2.088110)	(−2.115240)	(−2.064812)	(−2.691885)	(−2.738623)	(−2.652252)	(−2.858136)	(−2.898067)	(−2.824273)
Croatia	0.130222[a]	0.122180[a]	0.135852[a]	6.810055[a]	7.126556[a]	6.546158[a]	0.167075[a]	0.153831[a]	0.176778[a]	5.137669[a]	5.396708[a]	4.919577[a]
	(7.321290)	(6.882860)	(7.375445)	(8.187158)	(7.813737)	(8.157785)	(4.773209)	(4.345240)	(5.076204)	(5.287876)	(5.039512)	(5.482536)
Czech Republic	0.076274	0.071726	0.081230	3.662500[c]	3.876569[c]	3.443207[a]	−0.067015	−0.062983	−0.071565	−2.623535	−2.831017	−2.425006
	(1.507368)	(1.505649)	(1.506710)	(2.063687)	(2.027964)	(2.098308)	(−1.165992)	(−1.173562)	(−1.160394)	(−1.339086)	(−1.356061)	(−1.324317)
Estonia	−0.006963	−0.005772	−0.008505	−1.284138	−1.071002[a]	−1.511235	−0.025823[a]	−0.023879	−0.028080	−1.753272	−1.544637	−1.975206
	(−0.153198)	(−0.123471)	(−0.193474)	(−0.635545)	(−0.525336)	(−0.751317)	(−0.519940)	(−0.465379)	(−0.586311)	(−1.014918)	(−0.882400)	(−1.153470)
Georgia	0.036755	0.029482	0.041079	0.613447	0.411711	0.725780	0.011250	0.001450	0.017722	−0.532613	−0.877357	−0.343434
	(0.728205)	(0.632595)	(0.782309)	(0.253887)	(0.155350)	(0.314023)	(0.158492)	(0.022297)	(0.239004)	(−0.223438)	(−0.347456)	(−0.148093)
Hungary	0.005058	0.005508	0.004626	5.040315	4.898965	5.210384	−0.042221[a]	−0.041620[a]	−0.042587[a]	−15.04103[a]	−15.39681[a]	−14.70059[a]
	(0.493946)	(0.550339)	(0.442241)	(0.477848)	(0.472533)	(0.484717)	(−3.142667)	(−3.187684)	(−3.083685)	(−3.553597)	(−3.581987)	(−3.514318)
Latvia	−0.038996[c]	−0.039701	−0.038605[c]	−8.105651[b]	−7.683009[b]	−6.925953[a]	−0.077092[a]	−0.078724[b]	−0.075569[a]	−6.498163[a]	−6.072569[a]	−6.925953[a]
	(−1.737965)	(−1.690126)	(−1.808169)	(−2.598712)	(−2.583934)	(−3.826380)	(−2.973863)	(−2.848954)	(−3.106569)	(−3.694991)	(−3.557398)	(−3.826380)
Lithuania	−0.065591[a]	−0.067708[a]	−0.063499[a]	−9.552930[a]	−9.365990[a]	−9.765331[a]	−0.068541[b]	−0.069632[b]	−0.067384[a]	−7.455964[a]	−7.237424[a]	−7.692533[a]
	(−3.367239)	(−3.394050)	(−3.348875)	(−4.400535)	(−4.460235)	(−4.345077)	(−2.842951)	(−2.790196)	(−2.899559)	(−3.621308)	(−3.599029)	(−3.640497)
Macedonia	−0.004356	−0.003863	−0.004668	−6.404623	−6.061170	−6.657339	−0.029724	−0.029147	−0.029435	−7.909833	−7.580259[c]	−8.162092[b]
	(−0.388125)	(−0.334826)	(−0.425314)	(−0.771123)	(−0.752979)	(−0.781842)	(−1.403928)	(−1.458537)	(−1.435979)	(−1.970571)	(−1.942942)	(−1.986520)
Moldova	−0.106653[a]	−0.113156[a]	−0.102618[a]	−7.631907[a]	−7.358917[a]	−7.822163[a]	−0.156499[a]	−0.143591[a]	−0.148574[a]	−5.495005[a]	−5.292082[a]	−5.636330[a]
	(−6.179875)	(−6.656931)	(−5.935172)	(−6.749677)	(−7.220691)	(−6.509946)	(−7.054776)	(−6.497019)	(−6.688653)	(−7.105737)	(−7.501221)	(−6.905712)
Poland	−0.002566	−0.003192	−0.001870	−5.103076[a]	−13.91637[a]	−4.659048[a]	−0.040174[a]	−0.041934[a]	−0.038281[b]	−14.16423[a]	−13.67635[a]	−4.880602[a]
	(−0.170033)	(−0.208137)	(−0.126379)	(−0.694744)	(−3.913081)	(−0.661671)	(−2.856661)	(−2.907844)	(−2.795516)	(−3.882294)	(−3.943541)	(−3.882294)
Romania	−0.046691[a]	−0.047349[a]	−0.046147[a]	−18.28321[a]	−18.28154[a]	−18.28290[a]	−0.057933[a]	−0.058696[a]	−0.057307[a]	−14.69341[a]	−14.67112[a]	−14.70978[a]
	(−5.857184)	(−6.089734)	(−5.679835)	(−6.317592)	(−6.500401)	(−6.176992)	(−5.976829)	(−6.164210)	(−5.832316)	(−6.744467)	(−6.912281)	(−6.612415)
Russia	−0.014140	−0.014124[a]	−0.014075	−15.21637[b]	−15.50565[b]	−14.81923[b]	−0.020208[c]	−0.020309[c]	−0.020071[c]	−16.71801[a]	−16.98828[a]	−16.35360[a]
	(−1.311137)	(−1.329899)	(−1.279740)	(−2.200638)	(−2.225032)	(−2.160187)	(−1.929051)	(−1.902999)	(−1.943664)	(−2.639463)	(−2.656899)	(−2.607994)
Slovakia	0.007509	0.006725	0.008188	5.565902	5.304050	5.428809	−0.070846[a]	−0.070953[a]	−0.070621[a]	−10.69434[a]	−10.83503[a]	−10.57218[a]
	(0.471437)	(0.424522)	(0.513065)	(0.892448)	(0.833571)	(0.862857)	(−4.254804)	(−4.258711)	(−4.257434)	(−5.207804)	(−5.250482)	(−5.146949)
Slovenia	0.245136[a]	0.114020[a]	0.111156[a]	7.271960[a]	7.116941[a]	7.434501[a]	0.094749[a]	0.095120[a]	0.094191[a]	7.112159[a]	6.926257[a]	7.306521[a]
	(7.314322)	(6.742690)	(5.137456)	(7.963285)	(7.638646)	(8.284878)	(4.252621)	(4.099806)	(4.409593)	(5.154586)	(4.960354)	(5.350399)
Ukraine	−0.035603[a]	−0.035810[a]	−0.035400[a]	−0.035603[a]	−21.67766[a]	−21.48500[a]	−18.44119[a]	−0.043898[a]	−0.043637[a]	−0.044163[a]	−18.36019[a]	−18.52240[a]
	(−5.697099)	(−5.674878)	(−5.718987)	(−5.697099)	(−6.499429)	(−6.509618)	(−7.823876)	(−7.031626)	(−7.045711)	(−7.015333)	(−7.844942)	(−7.798249)
Panel	−0.0027821	−0.0664597	−0.0034369	−4.7728547	−6.1053560	−5.4404899	−0.9299746[c]	−0.0210262[c]	−0.1743433[c]	−7.232168[b]	−8.061905[b]	−7.705048[a]
	(−0.693105)	(−0.814843)	(−0.773991)	(−0.977381)	(−0.891765)	(−0.642419)	(−1.817516)	(−1.932092)	(−1.886907)	(−2.210033)	(−2.325655)	(−3.300773)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the *t*-statistic.

Table 6
The results of panel group mean FMOLS for Western Europe.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Austria	0.203333^{a}	0.192234^{a}	0.216020^{a}	4.171508^{a}	4.430294^{a}	3.904399^{a}	0.185327^{a}	0.176099^{a}	0.195713^{a}	3.673567^{a}	3.916911^{a}	3.422488^{a}
	(10.74078)	(11.30206)	(10.11536)	(12.88765)	(13.21533)	(12.36967)	(4.352943)	(4.506679)	(4.183312)	(5.765965)	(5.893102)	(5.609145)
Belgium	0.188962^{a}	0.193611^{a}	0.184099^{a}	3.336642^{a}	3.358168^{a}	3.313798^{a}	0.067463	0.072213	0.062607	2.749735^{b}	2.811321^{b}	2.685058^{b}
	(4.535443)	(4.714095)	(4.356370)	(5.019168)	(5.215519)	(4.820928)	(1.253649)	(1.338583)	(1.167289)	(2.450791)	(2.538921)	(2.360027)
Cyprus	0.476709^{a}	0.493837^{a}	0.456476^{a}	1.995875^{a}	1.954263^{a}	2.035586^{a}	0.459853^{a}	0.477423^{a}	0.439839^{a}	2.098673^{a}	2.040472^{a}	2.153946^{a}
	(17.90693)	(22.91596)	(13.49429)	(18.37257)	(24.69842)	(13.45511)	(17.97932)	(21.57649)	(13.74099)	(16.76806)	(20.70303)	(12.78447)
Denmark	−0.040124	−0.042756	−0.037587	−1.212858	−1.266393	−1.151033	−0.254181^{a}	−0.265322^{a}	−0.242612^{a}	−2.541246^{a}	−2.504724^{a}	−2.582629^{a}
	(−0.987804)	(−0.996032)	(−0.983618)	(−0.62518)	(−0.676029)	(−0.570361)	(−3.868337)	(−3.935483)	(−3.823482)	(−3.781533)	(−3.949853)	(−3.609405)
Finland	0.111377^{a}	0.111186^{a}	0.107155^{a}	0.064877	0.062544	0.064058	3.252934^{c}	3.182645^{c}	3.349028^{c}	7.098787^{a}	7.151183^{c}	7.055154^{a}
	(5.468953)	(5.379375)	(5.260989)	(1.512088)	(1.454903)	(1.519422)	(1.776098)	(1.740566)	(1.802072)	(7.146209)	(6.697944)	(7.291124)
France	5.299551^{a}	0.142277^{a}	0.160622^{a}	3.240094^{b}	4.432115^{a}	4.352919^{a}	0.088278^{a}	0.099194^{b}	0.077297^{a}	4.276673^{a}	5.764571^{a}	5.529241^{a}
	(4.572918)	(5.702391)	(6.548727)	(2.268712)	(5.968674)	(7.225086)	(2.432308)	(2.607111)	(2.248335)	(8.901711)	(4.146521)	(4.368524)
Germany	−0.152127	0.106829	−0.433925	−0.015094	−0.013046	−0.017602	−0.113712^{a}	−0.105618^{a}	−0.123578^{a}	−7.206076^{a}	−7.623242^{a}	−0.433925
	(−0.033102)	(0.021772)	(−0.101743)	(−0.68831)	(−0.638815)	(−0.743141)	(−5.132886)	(−4.961621)	(−5.360455)	(−5.120819)	(−4.945982)	(−0.101743)
Greece	0.212044^{a}	0.202554^{a}	0.217863^{a}	4.330063^{a}	4.412346^{a}	4.276757^{a}	0.161822^{a}	0.152203^{a}	0.167796^{a}	5.050097^{a}	5.125011^{a}	5.002294^{a}
	(10.65474)	(9.520915)	(11.48656)	(13.70013)	(12.33302)	(14.53885)	(6.001098)	(5.404580)	(6.468288)	(9.436895)	(8.647694)	(9.974959)
Iceland	0.526533^{a}	0.524246^{a}	0.520244^{a}	1.895862^{a}	1.877775^{a}	1.901813^{a}	0.221773^{a}	0.217736^{a}	0.224872^{a}	3.999022^{a}	3.833107^{a}	4.131133^{a}
	(27.22183)	(20.09260)	(17.29348)	(28.09514)	(22.50780)	(16.04780)	(7.141020)	(5.434961)	(9.429369)	(8.006489)	(6.177929)	(10.06801)
Ireland	0.296763^{a}	0.292681^{a}	0.301307^{a}	3.170567^{a}	3.189562^{a}	3.148362^{a}	0.251332^{a}	0.247269^{a}	0.255840^{a}	3.362502^{a}	3.380148^{a}	3.342083^{a}
	(14.56886)	(13.48644)	(16.04623)	(16.73749)	(15.41555)	(18.47272)	(8.180456)	(7.807523)	(8.666038)	(11.11981)	(10.60909)	(11.72296)
Italy	0.136854^{a}	0.142850^{a}	0.128698^{a}	5.368780^{a}	5.060621^{a}	5.705231^{a}	0.068881	0.059357	0.064663	4.744166^{a}	4.473785^{b}	5.046081^{a}
	(4.692961)	(4.505958)	(4.802029)	(6.036908)	(5.511568)	(6.515722)	(1.520587)	(1.489494)	(1.513046)	(2.985831)	(2.914114)	(3.030663)
Luxembourg	0.176801^{a}	0.171173^{a}	0.183704^{a}	4.019899^{a}	4.110657^{a}	3.915094^{a}	0.098748	0.094275	0.104566	2.118655	2.148021	2.082496
	(3.751087)	(3.665725)	(3.861136)	(4.170285)	(4.115616)	(4.228988)	(1.339948)	(1.296338)	(1.401039)	(1.527836)	(1.499901)	(1.559274)
Malta	0.750690^{a}	0.704034^{a}	0.797901^{a}	4.019899^{a}	0.965940^{a}	0.842484^{a}	0.705928^{a}	0.661792^{a}	0.750615^{a}	0.935659^{a}	0.999988^{a}	0.874039^{a}
	(3.712583)	(3.698490)	(3.714790)	(3.884066)	(3.893670)	(3.847623)	(3.570328)	(3.556653)	(3.572492)	(3.786694)	(3.790843)	(3.757806)
Netherlands	0.174824^{a}	0.172931^{a}	0.176916^{a}	5.128391^{a}	5.210767^{a}	5.037507^{a}	0.157348^{a}	0.155568^{a}	0.159340^{a}	4.785113^{a}	4.850608^{a}	4.712839^{a}
	(9.840861)	(10.26031)	(9.395339)	(10.97320)	(11.53199)	(10.38317)	(5.008612)	(5.052928)	(4.957173)	(5.804695)	(5.866289)	(5.728836)
Norway	0.112243^{a}	0.104427^{a}	0.123852^{a}	6.607033^{a}	7.321185^{a}	5.633733^{a}	0.184547^{a}	0.169285^{a}	0.207822^{a}	3.765365^{a}	4.114017^{a}	3.293215^{a}
	(4.796747)	(5.326260)	(4.102412)	(5.919977)	(6.531878)	(4.993289)	(3.749627)	(3.767666)	(3.655468)	(4.187037)	(4.189048)	(4.088937)
Portugal	0.356985^{a}	0.345917^{a}	0.364576^{a}	2.494590^{a}	2.484591^{a}	2.500925^{a}	0.246743^{a}	0.231027^{a}	0.259633^{a}	2.494590^{a}	2.269489^{a}	2.376424^{a}
	(8.782468)	(7.759906)	(9.643155)	(9.301539)	(8.338890)	(10.08518)	(3.414460)	(3.075134)	(3.726048)	(9.301539)	(3.965143)	(4.549597)
Spain	0.319791^{a}	0.318795^{a}	0.317529^{a}	1.017855^{a}	3.047017^{a}	3.047017^{a}	0.295803^{a}	0.290576^{a}	0.296663^{a}	2.881533^{a}	2.771998^{a}	2.982007^{a}
	(12.47863)	(9.774376)	(15.83513)	(47.71409)	(16.32856)	(16.32856)	(6.678709)	(5.718587)	(7.747330)	(7.616563)	(6.457632)	(8.915167)
Sweden	−0.022536	−0.019614	−0.026267	−2.745462	−2.491355	−3.036750	−0.094241^{b}	−0.085953^{c}	−0.104053^{b}	−3.076400^{a}	−2.967115^{c}	−3.202628^{b}
	(−1.048329)	(−0.906575)	(−1.237850)	(−0.77371)	(−2.491355)	(−0.880743)	(−2.162420)	(−1.937235)	(−2.449847)	(−2.245132)	(−2.086191)	(−2.440255)
Switzerland	0.055731^{b}	0.051206^{b}	0.062481^{b}	6.978925^{a}	7.319170^{a}	6.594659^{a}	−0.014492	−0.014055	−0.014339	−0.065195	7.319170^{b}	6.594659^{a}
	(2.272919)	(2.195000)	(2.401005)	(2.872349)	(2.799739)	(2.976527)	(−0.675896)	(−0.699808)	(−0.612799)	(−0.016278)	(2.799739)	(2.976527)
Turkey	0.090200^{a}	0.089056^{a}	0.091123^{a}	9.643412^{a}	9.604754^{a}	9.679235^{a}	0.084446^{a}	0.083375^{a}	0.085318^{a}	10.09025^{a}	10.04983^{a}	10.12780^{a}
	(7.628935)	(7.244457)	(8.015228)	(7.684470)	(7.304529)	(8.062523)	(7.188336)	(6.849423)	(7.526404)	(7.314680)	(6.979569)	(7.645248)
Panel	0.4637302^{a}	0.2148737^{a}	0.1956393^{a}	3.175542^{a}	3.2535487^{a}	3.0874096^{a}	0.3027315^{a}	0.2949544^{a}	0.3108515^{a}	2.5617735^{a}	1.49811373^{a}	3.2595887^{a}
	(7.392291)	(7.098249)	(7.202450)	(9.753131)	(8.1679728)	(7.6838461)	(3.487398)	(3.397401)	(3.4779055)	(5.047852)	(4.6447241)	(5.0139935)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the $t-$statistics.

Table 7
The results of panel group mean FMOLS for the Middle East and North Africa.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Algeria	0.114801[a]	0.102103[a]	0.133813[a]	5.402616[a]	5.536650[a]	5.243841[a]	0.085888[b]	0.074298[b]	0.103999[a]	5.220213[a]	5.184257[a]	5.305951[a]
	(3.621156)	(3.320199)	(4.148144)	(4.146389)	(3.736014)	(4.750830)	(2.684744)	(2.409145)	(3.209447)	(2.678043)	(2.345560)	(3.246314)
Bahrain	2.322932[a]	0.498878[a]	0.453527[a]	1.645513[a]	1.754701[a]	2.026244[a]	0.440405[a]	0.407348[a]	0.485249[a]	2.256245[a]	1.809859[a]	2.087296[a]
	(10.50020)	(6.796557)	(8.426823)	(5.363424)	(6.693836)	(8.464738)	(8.723332)	(10.29025)	(7.026732)	(10.07607)	(6.908167)	(8.785274)
Djibouti	−0.367781[b]	−0.361213[b]	−0.364630[a]	−1.100898[b]	−0.932759[a]	−1.210758[a]	−0.424391[a]	−0.434508[a]	−0.413653[a]	−1.209261[a]	−1.066213[b]	−1.302673[a]
	(−2.591596)	(−2.287728)	(−2.787129)	(−2.123647)	(−1.868506)	(−2.258741)	(−3.221161)	(−2.969639)	(−3.377409)	(−2.805847)	(−2.589073)	(−2.906784)
Egypt	0.374949[a]	0.360658[a]	0.384961[a]	2.541047[a]	2.612438[a]	2.484101[a]	0.322062[a]	0.309717[a]	0.330762[a]	3.004507[a]	3.090104[a]	2.936318[a]
	(9.993547)	(9.045484)	(10.47520)	(10.03120)	(9.006680)	(10.53452)	(12.19505)	(10.84803)	(12.75502)	(12.02077)	(10.59274)	(12.61204)
Iran	0.228618[a]	0.215935[a]	0.236252[a]	4.293794[a]	4.469463[a]	4.183960[a]	0.204654[a]	0.194397[a]	0.210690[a]	4.755410[a]	4.944335[a]	4.632339[a]
	(25.97170)	(16.96810)	(27.41465)	(26.07764)	(17.58143)	(26.15120)	(18.97741)	(14.63457)	(19.22912)	(18.62037)	(14.60136)	(18.39824)
Iraq	0.066264[a]	0.060510[a]	0.068278[a]	12.49446[a]	12.82606[a]	12.15734[a]	0.077526[a]	0.075470[a]	0.079157[a]	8.924235[a]	9.177004[a]	8.659796[a]
	(5.086199)	(6.425630)	(4.950469)	(5.520863)	(5.590390)	(5.413226)	(3.737253)	(3.755952)	(3.688105)	(3.953286)	(3.967550)	(3.918216)
Israel	0.356045[a]	0.313926[a]	0.400109[a]	2.698863[a]	3.078307[a]	2.380619[a]	0.339369[a]	0.298644[a]	0.381942[a]	2.835328[a]	3.226094[a]	2.507396[a]
	(14.73093)	(16.33616)	(13.27968)	(14.82678)	(16.37993)	(13.34119)	(15.99673)	(16.92706)	(14.91697)	(15.77504)	(16.41112)	(14.83585)
Jordan	0.455961[a]	0.468223[a]	0.448141[a]	0.455961[a]	1.898861[a]	0.448141[a]	0.339721[a]	0.349565[a]	0.333626[a]	2.273700[a]	2.203437[a]	2.319234[a]
	(7.436278)	(7.430582)	(7.370184)	(7.436278)	(7.668081)	(7.370184)	(5.996109)	(5.947252)	(5.991730)	(6.135145)	(6.108899)	(6.102820)
Kuwait	0.550483[a]	0.437705[b]	0.695277[b]	1.166756[a]	1.935534[a]	0.601778[b]	0.450121[a]	0.339127[a]	0.628891[a]	1.645788[a]	2.599434[a]	0.894008[a]
	(3.495658)	(6.210929)	(2.433910)	(3.667589)	(6.128301)	(2.366648)	(4.707666)	(6.531558)	(3.615257)	(4.810303)	(6.040357)	(3.061593)
Lebanon	0.286806[a]	0.226287[a]	0.304263[b]	1.809020[a]	2.076951[a]	2.932602[a]	0.307154[a]	0.235911[a]	0.328386[a]	2.032866[a]	2.959304[a]	1.855730[a]
	(3.029550)	(3.804138)	(2.818816)	(3.592234)	(4.021590)	(3.822806)	(3.379222)	(4.173525)	(3.143453)	(3.704555)	(4.058652)	(3.895302)
Libya	0.148027[a]	0.133130[a]	0.179144[a]	5.941558[a]	6.615714[a]	4.843988[a]	0.136985[a]	0.122911[a]	0.166635[a]	7.088158[a]	7.861609[a]	5.808728[a]
	(6.528675)	(6.749572)	(6.155136)	(6.855537)	(6.998654)	(6.445635)	(13.47031)	(13.93724)	(11.82231)	(13.38732)	(13.16864)	(12.54493)
Morocco	0.362645[a]	0.375437[a]	0.341877[a]	2.672562[a]	2.810650[a]	0.375437[a]	0.273278[a]	0.257089[a]	0.283260[a]	0.273278[a]	3.670847[a]	0.283260[a]
	(12.20017)	(11.74297)	(10.99881)	(12.06338)	(10.96696)	(11.74297)	(10.68462)	(9.535907)	(10.71222)	(10.68462)	(9.210855)	(10.71222)
Oman	0.739137[a]	0.686548[a]	0.802817[a]	1.322804[a]	1.430928[a]	1.175073[a]	0.699231[a]	0.649816[a]	0.765045[a]	1.407549[a]	1.520252[a]	1.251695[a]
	(12.73492)	(12.43301)	(9.780632)	(11.76464)	(11.34484)	(9.032928)	(13.32131)	(12.95415)	(10.49505)	(12.93229)	(12.61604)	(10.00780)
Qatar	2.957972[a]	3.110103[a]	2.707763[a]	3.409178[a]	3.581721[a]	3.123076[a]	0.311349[a]	0.286691[a]	0.357268[a]	0.304343[a]	0.241942[a]	0.263781[a]
	(8.50335)	(7.198494)	(11.50673)	(7.49677)	(6.536077)	(9.295642)	(8.437836)	(7.085913)	(12.12779)	(10.00482)	(6.527533)	(7.581969)
Saudi Arabia	0.405812[a]	0.389225[a]	0.419146[a]	2.436588[a]	2.661606[a]	2.106659[a]	0.379141[a]	0.361193[a]	0.396091[a]	2.136047[a]	2.348551[a]	1.825461[a]
	(6.734764)	(8.364728)	(4.759919)	(9.785640)	(12.97260)	(6.221553)	(9.639077)	(12.68162)	(6.127131)	(6.930451)	(8.528269)	(4.923843)
Syria	0.240826[a]	0.237790[a]	0.260079[a]	3.480416[a]	3.852737[a]	3.153115[a]	0.236101[a]	0.222798[a]	0.244483[a]	3.768932[a]	4.158232[a]	3.427391[a]
	(10.09602)	(8.292158)	(5.913437)	(6.989833)	(8.303815)	(5.711421)	(7.616856)	(8.786181)	(6.333145)	(7.446770)	(8.782396)	(6.072275)
Tunisia	0.260251[a]	0.260606[a]	0.259654[a]	2.344250[a]	2.460970[a]	2.399567[a]	0.209107[a]	0.209921[a]	0.208217[a]	2.785657[a]	2.851980[a]	2.725935[a]
	(3.543204)	(3.662257)	(3.434973)	(3.967045)	(4.172182)	(4.067925)	(3.236218)	(3.346447)	(3.137451)	(3.583629)	(3.682284)	(3.490472)
United Arab Emirates	0.344530[a]	0.346358[a]	0.341355[a]	2.895695[a]	2.886745[a]	2.908575[a]	0.335943[a]	0.338219[a]	0.332137[a]	2.911159[a]	2.896732[a]	2.930495[a]
	(19.18916)	(17.60177)	(19.71618)	(17.99478)	(16.03890)	(19.28663)	(14.34798)	(13.45573)	(14.85075)	(12.97805)	(11.86143)	(13.96889)
Yemen	0.178354[a]	0.152856[a]	0.200133[a]	4.106749[a]	4.617801[a]	3.793119[a]	0.174725[a]	0.148407[a]	0.198032[a]	3.691272[a]	4.076746[a]	3.458867[a]
	(5.392278)	(5.415141)	(5.397746)	(6.838372)	(6.282731)	(6.977224)	(4.562912)	(4.417193)	(4.753560)	(5.317394)	(4.673985)	(5.725425)
Panel	0.5277174[a]	0.421845[a]	0.435366[a]	3.1587858[a]	3.4828988[a]	2.9013935[a]	0.257808[a]	0.2340533[a]	0.2852745[a]	2.9529171[a]	3.1622978[a]	2.7300530[a]
	(9.090780)	(8.184744)	(8.220753)	(8.541828)	(8.344973)	(8.354659)	(8.341761)	(8.355162)	(7.924096)	(8.328056)	(7.762987)	(7.735615)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the *t*-statistics.

Table 8
The results of panel group mean FMOLS for sub Saharan Africa.

Country	TD→EN	EX→EN	IM→EN	EN→TD	EN→EX	EN→IM	TD→EM	EX→EM	IM→EM	EM→TD	EM→EX	EM→IM
Angola	0.071839[a]	0.070966[a]	0.072968[a]	9.009847[a]	9.205036[a]	8.768247[a]	0.066091[a]	0.065142[a]	0.067213[a]	12.18927[a]	12.44235[a]	11.87832[a]
	(3.890282)	(3.967363)	(3.795792)	(4.769846)	(4.835724)	(4.681255)	(5.101787)	(5.201635)	(4.966744)	(5.561671)	(5.660468)	(5.423824)
Benin	1.080956[a]	1.073102[a]	1.075147[a]	0.836461[a]	0.790576[a]	0.870439[a]	1.077727[a]	1.069629[a]	1.072189[a]	0.833290[a]	0.787291[a]	0.867381[a]
	(7.862444)	(6.088416)	(9.770801)	(7.996846)	(6.145816)	(9.982097)	(7.740378)	(6.017686)	(9.576929)	(7.844601)	(6.054283)	(9.742963)
Botswana	0.275030[a]	0.289918[a]	0.275030[a]	3.600951[a]	5.129482[a]	3.360942[a]	0.166975[a]	0.173372[a]	0.159563[a]	5.194525[a]	0.283314[a]	5.036312[a]
	(16.49541)	(12.92816)	(16.49541)	(16.10351)	(9.162348)	(12.96610)	(8.180302)	(8.462445)	(7.325723)	(8.276995)	(16.42810)	(9.196166)
Burkina Faso	0.588501[a]	0.534313[a]	0.615862[a]	1.604739[a]	1.672117[a]	1.559917[a]	0.532120[a]	0.480749[a]	0.557168[a]	1.737007[a]	1.784926[a]	1.702518[a]
	(10.50979)	(7.256419)	(12.91892)	(10.14851)	(6.842485)	(12.42488)	(9.950375)	(7.001673)	(11.91814)	(9.963921)	(6.868768)	(11.73087)
Burundi	−0.099820[b]	−0.105642[b]	−0.097430[b]	−0.099820[b]	−3.099253[b]	−0.097430[b]	−0.148940[a]	−0.158842[b]	−0.143914[a]	−2.851987[b]	−2.328310[b]	−3.010354[b]
	(−2.369510)	(−2.171146)	(−2.422909)	(−2.369510)	(−2.120112)	(−2.422909)	(−3.314935)	(−3.079544)	(−3.324443)	(−2.651524)	(−2.487788)	(−2.647481)
Cameroon	0.315736[a]	0.335437[a]	0.288893[a]	2.242979[a]	1.779831[a]	2.692497[a]	0.297202[a]	0.377825[a]	0.232185[b]	1.499772[b]	1.316209[a]	1.673423[b]
	(5.276356)	(4.297902)	(6.022051)	(4.803488)	(3.822598)	(5.496248)	(3.088082)	(3.405106)	(2.646026)	(2.800549)	(2.987324)	(2.596677)
Cape Verde	0.834638[a]	0.714036[a]	0.871648[a]	1.105709[a]	1.188415[a]	1.082439[a]	0.859061[a]	0.726048[a]	0.900817[a]	1.021256[a]	1.082402[a]	1.004828[a]
	(8.131446)	(5.826477)	(9.364668)	(8.724059)	(6.134866)	(10.11436)	(6.506123)	(4.845018)	(7.380338)	(6.803609)	(4.982956)	(7.757181)
Central African Republic	0.434755[a]	0.238011	0.407830[a]	2.982988[b]	0.804400	1.734308[a]	0.312699[a]	0.250433[b]	0.261178[b]	1.690744[b]	1.535815[b]	1.783615[b]
	(3.426309)	(1.505816)	(4.348638)	(2.164312)	(1.307556)	(3.956608)	(3.503937)	(2.563658)	(3.158205)	(3.032541)	(2.192816)	(2.809829)
Chad	0.058271	0.067674	0.016450	1.231232	2.415564	0.090987	0.059093[a]	0.071945	0.010909	1.086682	2.245791	−0.031758
	(0.993414)	(1.664870)	(0.187559)	(0.926805)	(1.402404)	(0.093280)	(0.909032)	(1.603416)	(0.113209)	(0.914104)	(1.459913)	(−0.035854)
Comoros	0.559647[a]	0.709213[a]	0.497111[a]	1.639495[a]	1.190521[a]	1.804918[a]	0.626533[a]	0.803034[a]	0.556103[a]	1.480868[a]	1.097932[a]	1.620896[a]
	(7.322444)	(5.059863)	(7.068178)	(9.222719)	(6.354735)	(8.785240)	(8.183924)	(6.819618)	(7.214974)	(8.378117)	(7.204577)	(7.435839)
Congo-Brazzaville	0.541320[a]	0.487769[a]	0.608546[a]	1.009552[a]	0.998723[a]	1.039908[a]	0.576628[a]	0.523290[a]	0.636400[a]	1.439493[a]	1.515266[a]	1.353969[a]
	(3.874342)	(3.480909)	(4.604562)	(3.597744)	(3.018324)	(4.577789)	(6.880282)	(6.068078)	(7.552129)	(7.017729)	(6.241982)	(7.664182)
Côte d'Ivoire	2.419265[a]	0.366122[a]	2.323763[a]	2.419265[a]	2.500641[a]	2.323763[a]	0.282624[a]	0.277425[a]	0.287154[a]	3.113389[a]	3.220737[a]	2.987164[a]
	(9.901119)	(9.942322)	(9.125140)	(9.901119)	(10.38049)	(9.125140)	(7.304893)	(7.681997)	(6.783251)	(7.964934)	(8.234048)	(7.516568)
Equatorial Guinea	0.702643[a]	0.626402[a]	0.795513[a]	1.140227[a]	1.295304[a]	0.957364[a]	0.533308[a]	0.476254[a]	0.603576[a]	1.595632[a]	1.819143[a]	1.357899[a]
	(6.139070)	(6.757882)	(5.037674)	(6.187165)	(6.769911)	(5.145500)	(8.761241)	(8.946000)	(7.479482)	(8.015269)	(8.066725)	(7.423226)
Eritrea	−0.694679[a]	−0.284023	−0.673883[a]	−1.104267[a]	−1.062700[b]	−1.073404[a]	−0.642438[a]	−0.202248	−0.634954[a]	−1.070432[a]	−0.890183[b]	−1.081844[a]
	(−3.589803)	(−1.712491)	(−3.240366)	(−4.427275)	(−2.501155)	(−3.658828)	(−3.198055)	(−1.191074)	(−3.102124)	(−4.129708)	(−2.228614)	(−3.529154)
Ethiopia	0.315089[a]	0.320621[a]	0.312056[a]	2.584194[a]	2.398099[a]	2.672412[a]	0.294179[a]	0.297218[a]	0.292372[a]	2.395025[a]	2.195584[a]	2.490415[a]
	(5.179850)	(4.502584)	(5.560784)	(5.490187)	(4.691982)	(5.933653)	(3.783354)	(3.382481)	(4.002300)	(4.156296)	(3.644323)	(4.426399)
Gabon	0.017575	0.018439	0.016763	0.974126	1.080892	0.765766	−0.179189[a]	−0.164430[a]	−0.208537[a]	−4.784504[a]	−5.256189[a]	−4.001218[a]
	(0.367168)	(0.428993)	(0.298918)	(0.444629)	(0.452458)	(0.408981)	(−6.464281)	(−6.694433)	(−5.818156)	(−7.153202)	(−7.405108)	(−6.373769)
Gambia	0.847847	−0.348478[c]	1.238907[a]	0.241290	−0.749340	0.710330[a]	0.760690	−0.331877[c]	1.141539[a]	0.242658	−0.851798	0.756876[a]
	(1.622009)	(−1.878220)	(5.990155)	(1.318072)	(−1.442918)	(6.282057)	(1.547690)	(−1.932658)	(5.781459)	(1.226150)	(−1.542394)	(6.191739)
Ghana	0.084893[a]	0.084807[a]	0.084882[a]	10.44176[a]	10.46008[a]	10.42972[a]	0.168901[a]	0.168479[a]	0.169090[a]	5.784606[a]	5.785425[a]	5.784216[a]
	(6.257482)	(6.260734)	(6.247032)	(6.887959)	(6.897302)	(6.868200)	(15.46763)	(14.72641)	(15.86248)	(15.54806)	(14.80911)	(15.92523)
Guinea	0.104145[a]	0.106856[a]	0.101770[a]	7.843793[a]	7.727331[a]	7.951913[a]	0.055229[a]	0.056348[a]	0.054159[a]	16.28877[a]	16.00098[a]	16.55156[a]
	(4.797542)	(4.969270)	(4.657492)	(5.521625)	(5.770174)	(5.310671)	(6.622469)	(6.755691)	(6.493996)	(5.626602)	(5.738182)	(5.520308)
Guinea-Bissau	5.389155[a]	0.156583[a]	0.251107[a]	4.120024[a]	3.617019[a]	4.227805[a]	0.228058[a]	0.156541[a]	0.262018[a]	5.782490[a]	3.632111[a]	4.113810[a]
	(6.132216)	(9.354560)	(7.921127)	(15.85522)	(8.245700)	(10.50966)	(9.424323)	(6.431229)	(9.723825)	(9.195113)	(9.917705)	(9.393942)
Kenya	0.248189[a]	0.273826[a]	0.229653[a]	3.882157[a]	3.510313[a]	4.184052[a]	0.285898[a]	0.314753[a]	0.264890[a]	3.400214[a]	3.069630[a]	3.668158[a]
	(11.92309)	(12.27575)	(11.25394)	(13.06679)	(14.18007)	(12.00371)	(12.75969)	(12.46042)	(12.34027)	(14.03015)	(14.17280)	(13.25342)
Lesotho	0.452140[a]	0.313991[a]	0.508096[a]	2.047720[a]	2.979523[a]	1.794157[a]	0.325171[a]	0.212944[a]	0.375490[a]	2.242347[a]	3.136245[a]	2.001538[a]
	(7.791037)	(7.748100)	(7.631111)	(8.397211)	(8.594643)	(8.091453)	(4.418307)	(3.833407)	(4.694709)	(4.643313)	(4.064835)	(4.929452)
Liberia	0.072593[a]	0.077602[a]	0.069095[a]	0.072593[a]	10.70079[a]	0.069095[a]	0.074093[a]	0.079088[a]	0.070536[a]	11.11303[a]	10.18983[a]	11.72827[a]
	(5.884897)	(5.704037)	(5.905420)	(5.884897)	(5.145774)	(5.905420)	(5.670596)	(5.463036)	(5.702230)	(5.126788)	(4.847396)	(5.203814)
Madagascar	0.253103[a]	0.258333[a]	0.249269[a]	3.130121[a]	3.020797[a]	3.199659[a]	0.258414[a]	0.262928[a]	0.254919[a]	2.883911[a]	2.774915[a]	2.953588[a]
	(5.478461)	(5.249057)	(5.663392)	(6.592228)	(6.100050)	(6.922368)	(4.751572)	(4.519005)	(4.938605)	(6.011655)	(5.553632)	(6.315745)
Malawi	0.127513[a]	0.132115[a]	0.124647[a]	7.609504[a]	7.244160[a]	7.837082[a]	0.109968[a]	0.112895[a]	0.108046[a]	7.727497[a]	7.352443[a]	7.960531[a]
	(14.89623)	(12.10607)	(17.12117)	(15.04130)	(12.19563)	(17.25405)	(7.503808)	(6.840320)	(7.936251)	(8.923581)	(8.009005)	(9.463089)
Mali	0.176371[a]	0.152299[a]	0.193518[a]	4.819317[a]	5.423870[a]	4.441933[a]	0.195466[a]	0.168241[a]	0.214973[a]	5.401758[a]	6.106286[a]	4.960313[a]
	(11.29513)	(9.720378)	(11.92752)	(10.00524)	(8.633358)	(10.68236)	(10.04032)	(8.845596)	(10.52443)	(11.34805)	(9.561301)	(12.23817)
Mauritania	−0.077805	−0.084531	−0.070653	−1.135889	−0.937675	−1.016441	−0.110259[a]	−0.115385	−0.104172	−0.818169	−0.954260	−0.729229
	(−0.813236)	(−0.896125)	(−0.741258)	(−1.267440)	(−1.034901)	(−1.130231)	(−1.257271)	(−1.339800)	(−1.186301)	(−0.934290)	(−1.086671)	(−0.830214)

Mauritius	0.503712[a]	0.521952[a]	0.484992[a]	1.881922[a]	1.837157[a]	1.919923[a]	0.519996[a]	0.536656[a]	0.502383[a]	1.861528[a]	1.804643[a]	1.910889[a]
	(10.90211)	(12.48897)	(9.399665)	(11.43971)	(12.89134)	(9.948774)	(12.51895)	(13.30036)	(11.11081)	(12.93392)	(13.55053)	(11.58534)
Mozambique	0.608527[a]	0.498660[a]	0.662968[a]	1.454512[a]	1.803182[a]	1.309764[a]	0.213261[a]	0.173539[a]	0.233034[a]	3.229606[a]	4.034465[a]	2.868249[a]
	(7.048869)	(7.491916)	(6.660491)	(7.736553)	(8.050922)	(7.414707)	(4.738064)	(5.099866)	(4.423195)	(5.158693)	(5.343712)	(4.865892)
Namibia	0.649811[a]	0.631933[a]	0.664999[a]	1.496376[a]	1.531759[a]	1.463635[a]	0.491725[a]	0.483138[a]	0.498054[a]	1.904432[a]	1.933554[a]	1.876655[a]
	(9.224827)	(9.256311)	(9.028535)	(11.02181)	(10.87417)	(10.89824)	(9.362509)	(9.783609)	(8.807650)	(11.48456)	(12.66513)	(10.36044)
Niger	0.088376[a]	0.105279[a]	0.080984[a]	6.456082[a]	5.320255[a]	7.088365[a]	0.073949[a]	0.089642[a]	0.067492[a]	9.476619[a]	7.916828[a]	10.36070[a]
	(3.454019)	(3.351392)	(3.494644)	(3.557380)	(3.406181)	(3.615956)	(3.859165)	(3.822819)	(3.896749)	(4.832989)	(4.674534)	(4.911251)
Nigeria	0.027710	0.028031	0.027065	6.095412[b]	6.158025[b]	5.998232[b]	−0.025810	−0.026912	−0.024321	−3.682820	−3.617028[a]	−3.734198
	(0.980195)	(0.991464)	(0.964189)	(2.145960)	(2.170149)	(2.100317)	(−1.158290)	(−1.188943)	(−1.119024)	(−0.899333)	(−0.877929)	(−0.916497)
Rwanda	0.019996	0.017593	0.020095	5.170358	4.786919	6.673242	0.039967[a]	0.035507[a]	0.040891[a]	16.54356[a]	20.03512[a]	15.55772[b]
	(1.110385)	(1.231359)	(1.075286)	(1.166415)	(1.139451)	(1.261093)	(3.364271)	(3.816986)	(3.220729)	(3.936896)	(4.267983)	(3.801539)
Sao Tomé e Príncipe	0.130188[a]	0.114858[b]	0.119384[a]	5.661506[a]	4.737744[a]	5.862919[a]	0.140373[a]	0.123063[b]	0.142362[a]	5.170450[a]	4.306526[a]	5.359325[a]
	(4.123273)	(2.791066)	(7.204368)	(4.418228)	(3.110806)	(4.810026)	(4.028071)	(2.730149)	(4.395107)	(4.268534)	(3.017200)	(4.639500)
Senegal	0.566786[a]	0.643120[a]	0.515612[a]	1.733934[a]	1.492518[a]	1.899229[a]	0.539326[a]	0.609719[a]	0.491712[a]	1.826334[a]	1.563208[a]	2.006133[a]
	(23.44886)	(13.02894)	(21.97177)	(25.39435)	(13.50131)	(22.80349)	(17.78051)	(10.75429)	(19.64261)	(18.84455)	(11.17332)	(19.97356)
Seychelles	0.420383[a]	0.424822[a]	0.415968[a]	2.011042[a]	2.003805[a]	2.017247[a]	0.400734[a]	0.405586[a]	0.396143[a]	2.126656[a]	2.114936[a]	2.136983[a]
	(5.724445)	(5.862049)	(5.584631)	(6.428266)	(6.543932)	(6.289902)	(5.742542)	(5.866135)	(5.620396)	(6.428277)	(6.521392)	(6.317259)
Sierra Leone	0.177506[a]	0.203391[a]	0.160691[a]	4.324878[a]	3.889732[a]	4.615945[a]	0.160126[a]	0.184879[a]	0.144095[a]	4.237868[a]	3.876172[a]	4.480220[a]
	(4.854584)	(4.931660)	(4.676264)	(7.325346)	(7.092449)	(6.897944)	(4.356198)	(4.543404)	(4.150123)	(6.255001)	(6.192283)	(5.851722)
Somalia	0.174024[a]	0.161777[a]	0.175967[a]	4.147139[a]	4.063390[a]	4.164367[a]	0.166835[a]	0.155176[a]	0.168694[a]	4.249639[a]	4.163539[a]	4.267314[a]
	(7.654190)	(6.512490)	(7.789481)	(4.777524)	(4.633765)	(4.795354)	(6.849789)	(5.831444)	(6.988471)	(4.449538)	(4.259631)	(4.476819)
South Africa	0.172139[a]	0.180110[a]	0.164108[a]	5.728881[a]	5.443115[a]	6.035406[a]	0.168067[a]	0.175781[a]	0.160290[a]	5.822814[a]	5.529491[a]	6.136910[a]
	(23.82543)	(19.65025)	(29.03499)	(24.23434)	(20.15580)	(29.12281)	(21.05223)	(17.79712)	(24.74758)	(21.98997)	(18.62949)	(25.70599)
Swaziland	0.158824[a]	0.151978[a]	0.164342[a]	4.696980[a]	4.814977[a]	4.597583[a]	0.145174[a]	0.137156[b]	0.151584[a]	4.010882[a]	4.069167[a]	3.964472[a]
	(4.106151)	(3.980596)	(4.200565)	(5.067072)	(4.910837)	(5.189291)	(2.961483)	(2.824908)	(3.077197)	(3.516864)	(3.368512)	(3.653533)
Tanzania	0.289598[a]	0.253879[a]	0.308662[a]	3.083972[a]	3.318802[a]	2.960130[a]	0.333167[a]	0.290470[a]	0.356342[a]	2.580182[a]	2.737277[a]	2.500087[a]
	(7.805664)	(6.410153)	(8.534838)	(8.572062)	(6.946607)	(9.359421)	(7.219656)	(5.839673)	(8.155422)	(7.733017)	(6.129031)	(8.767380)
Togo	0.770724[a]	0.795150[a]	0.751667[a]	0.926047[a]	0.874849[a]	0.961903[a]	0.896742[a]	0.925841[a]	0.874096[a]	0.780458[a]	0.737057[a]	0.810834[a]
	(3.909583)	(3.758848)	(3.999339)	(4.260786)	(4.050458)	(4.390704)	(3.788338)	(3.651049)	(3.868581)	(4.058715)	(3.861305)	(4.180956)
Uganda	0.319291[a]	0.288993[a]	0.335591[a]	3.051676[a]	3.314161[a]	2.923575[a]	0.382825[a]	0.346040[a]	0.402292[a]	2.493423[a]	2.699739[a]	2.391665[a]
	(13.53374)	(11.26519)	(14.91970)	(14.06448)	(11.57589)	(15.67661)	(10.41290)	(9.016529)	(11.09010)	(11.18377)	(9.596613)	(11.99036)
Zambia	0.044747[a]	0.046751[a]	0.042396[a]	9.446621[a]	10.26901[a]	8.675650[b]	−0.016507	−0.013980	−0.018948	−8.476371	−7.972136	−8.908796
	(2.694204)	(2.996411)	(2.423062)	(2.948736)	(3.289579)	(2.645558)	(−0.993652)	(−0.842132)	(−1.143982)	(−1.700465)	(−1.541938)	(−1.848263)
Zimbabwe	−0.234532	0.058299	−0.256883[b]	−1.159300[a]	−0.083556	−1.950383[a]	−0.574768	−0.483608[a]	−0.423656	−0.483545[c]	0.068449	−0.893815[a]
	(−1.556188)	(0.253644)	(−2.667123)	(−2.937668)	(−0.200053)	(−4.702405)	(−0.675823)	(−2.212340)	(−1.267406)	(−1.821859)	(0.281884)	(−3.109871)
Panel	0.4441493[a]	0.2546160[a]	0.3309818[a]	3.0534370[a]	3.1926165[a]	3.0347632[a]	0.2417496[a]	0.223902[a]	0.2526836[a]	3.0498012[a]	2.9539605[a]	3.0102726[a]
	(6.337376)	(5.580231)	(6.756687)	(6.795839)	(5.741932)	(6.931019)	(5.632010)	(4.958072)	(5.877151)	(5.873798)	(5.501355)	(6.172805)

Note: → Denote the direction of the relationship, a, b and c denote significance at 1%, 5% and 10% respectively. The numbers in brackets are the *t*-statistics.

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